DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

FIRST ANNUAL
GENERAL REPORT
OF THE DEPARTMENT,
1900-01.

Presented to both Houses of Parliament by Command of His Majesty

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DUBLIN CASTLE,
4th November, 1901.

SIR,

I have to acknowledge the receipt of your letter of the 1st instant forwarding, for submission to His Excellency the Lord Lieutenant, the First Annual General Report of the Department of Agriculture and Technical Instruction for Ireland.

I am,
Sir,
Your obedient Servant,
D. HARREL.

THE SECRETARY,
DEPARTMENT OF AGRICULTURE
AND TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION STREET,
DUBLIN.

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FIRST

ANNUAL GENERAL REPORT

OF THE

Department of Agriculture and Technical Instruction for Ireland.

TO HIS EXCELLENCY
GEORGE HENRY, EARL CADOGAN, K.G., &c., &c., &c.,
LORD LIEUTENANT-GENERAL AND GENERAL GOVERNOR OF IRELAND.

May it please Your Excellency,

I have the honour on behalf of the Department of Agriculture and Technical Instruction for Ireland to submit their First Annual General Report.

The purpose of the Agriculture and Technical Instruction (Ireland) Act, 1899, is to establish an Irish Department of State, so constituted as to be representative at once of the Crown, the recently created local government bodies of the country, and those classes of the people with whom its work is chiefly concerned; and to give to this Authority the function of aiding, improving, and developing the agriculture, fisheries, and other industries of Ireland, in so far as may be proper to such a Department, and in such a manner as to stimulate and strengthen the self-reliance of the people.

With this end in view a Department has been constituted with a staff paid out of a Parliamentary Vote; there have been appointed, to advise and co-operate with the Department, an Agricultural Board, a Board of Technical Instruction, and a Council of Agriculture, and a Consultative Committee of Education; and there has been placed at the disposal of the Department and its Boards an endowment of £166,000 per annum. The following powers and duties hitherto divided amongst separate branches of government have been transferred to the Department. viz.:—

(*a*.) Those of the Veterinary Department of the Privy Council in relation to the Diseases of Animals Acts, the Destructive Insects Act, and the Fertilisers and Feeding Stuffs Act.

(*b*.) Those of the Registrar-General and the Land Commission in relation to agricultural statistics and statistics of prices and of produce.

(*c*.) Those of the Land Commission under the Markets and Fairs (Weighing of Cattle) Acts.

(*d*.) Those of the Board of Education, South Kensington, in relation to the administration of the Science and Art grant, the grant in aid of Technical Instruction, and the Science and Art Institutions in Ireland.

(*e*.) Those of the Board of National Education in connection with the Albert Institution and Munster Institution; and,

(*f*.) Those of the Inspectors of Irish Fisheries.

Furthermore, by the Sale of Food and Drugs Act of 1899 certain important powers of supervision and administration in regard to the execution of that and previous Acts dealing with the sale of food and drugs are vested in the Department.

The organisation of the Department has been carried out, so far as it has gone, in careful observance of the fact that there is an essential unity of purpose behind its various functions, whether these directly concern the development of agriculture and industries, the promotion of technical instruction, the collection and publication of information, or the administration of laws to prevent the spread of contagious disease amongst cattle and other live stock, and fraud in the sale of agricultural requirements and produce.

ORDER OF REPORT.

The Report divides itself as follows :—

PART I.—ADMINISTRATION AND FUNDS.

1. Council of Agriculture and Boards.
2. Funds of the Department.
3. Administration of the Endowment Fund.
4. Organisation of the Department.

PART II.—POLICY AND PROCEDURE.

1. Local Initiative and Central Direction.
2. Direct means of Action.
3. Educational Policy.
4. Local Organisation.

PART III.—DETAILS OF DEPARTMENT'S OPERATIONS.

1. Agriculture.
2. Technical Instruction.
3. Fisheries.
4. Statistics and Intelligence.
5. Veterinary.
6. Transits and Markets.

PART I.—ADMINISTRATION AND FUNDS.

1. COUNCIL OF AGRICULTURE AND BOARDS.

Immediately after the Department came into being the necessary steps were taken to constitute the Council of Agriculture and the Agricultural Board and Board of Technical Instruction, in accordance with the provisions of Section 7 of the Agriculture and Technical Instruction Act.

The Department, as empowered by Section 24 of the Act, made and issued to the County Councils and County Borough Councils regulations for the appointment of members of these bodies.

Council of Agriculture.

The constitution of the Council of Agriculture provides that it shall consist of 104 members, viz.:—2 persons appointed by each County Council (Cork being regarded as two counties), making, in all, 68, and a number of persons resident in each province equal to the number of counties (exclusive of County Boroughs) in the province, to be appointed by the Department with due regard to the representation on the Council of any agricultural or industrial organisations in the province, making 34; with the President and Vice-President of the Department as *ex-officio* members.

By the second week of May the County Councils, having completed the election of their 68 representatives to the Council, and the Department having nominated 34 representatives from the different provinces, the Council of Agriculture was fully constituted. The list of members of the Council will be found in the Appendices. Members of the Council of Agriculture hold office for three years.

The first meeting of the Council of Agriculture was summoned for 29th May, 1900. It was held in the buildings of the Royal University, which the Senate of the University kindly lent to the Department for the purpose. All the members of the Council but five attended, and the keenest interest was taken in the proceedings. The meeting was opened by an address from the Vice-President, in which he explained the general purpose of the new Act, and the procedure to be adopted by the Council.

The principal business of the first meeting of the Council was to elect two-thirds of the Agricultural Board, and four representatives to the Board of Technical Instruction. The members representing each province constitute separate Committees on the Council, styled the Provincial Committees of the respective Provinces, and it is the function of these Provincial Committees to appoint, each, two persons to be members of the Agricultural Board, and one person to be a member of the Board of Technical Instruction. For the purpose of this election the Council separated into four Committee rooms, and there appointed their respective representatives. The names of the persons chosen to serve on the two Boards will be given lower down.

A general discussion as to the purposes of the Act followed this election, and certain suggestions were made by the Council, several of which the Department found it possible, subsequently, to carry out.

An official report of the proceedings of the Council was published, afterwards, in the *Journal* of the Department.

The Agricultural Board.

That portion of the Department's Endowment Fund intended for the purposes of agriculture, rural industries, and sea and inland fisheries, with the exception of a special sum of £10,000 for sea fisheries, and certain specified capital sums, must be administered by the Department, with the concurrence of the Agricultural Board. In addition to their control of all such expenditure this Board act as an advisory body to the Department in reference to "all matters and questions submitted to them by the Department in connexion with the purposes of agriculture and other rural industries".

It is provided by the Act that the Agricultural Board shall consist of twelve persons, viz.:—Eight appointed by the Provincial Committees of the Council of Agriculture and four appointed by the Department. The appointments by the Provincial Committees were made at the first meeting of the Council of Agriculture, as above described. The Agricultural Board, as fully constituted, consisted of the following members :—

Name.	Address.	By whom appointed.
Byrne, James, J.P., .	Wallstown Castle, Castletownroche, Co. Cork.	The Department.
Clark, Alexander L., .	Moyola Lodge, Castledawson, Co. Londonderry.	The Department.
Esmonde, Sir Thomas H. Grattan. Bart., M.P.	Ballynastragh, Inch R.S.O., Co. Wexford.	Leinster Provincial Committee.
Everard, Colonel N. T., D.L.	Randalstown, Navan, Co. Meath.	The Department.
Gore-Booth, Sir Josslyn, Bart.	Lissadill, Sligo, . ,	The Department.
Healy, Most Rev. John, D.D., Lord Bishop of Clonfert.	Mount St. Bernard, Ballinasloe, Co. Galway.	Connaught Provincial Committee.
Kelly, Most Rev. Denis, D.D., Lord Bishop of Ross.	Skibbereen, Co. Cork, .	Munster Provincial Committee.
Magee, Michael J., .	Ashgrove, Newry, Co. Down.	Ulster Provincial Committee.
Montgomery, H. de F., D.L.	Blessingbourne, Fivemiletown, Co. Tyrone.	Ulster Provincial Committee.
Moore, Count, D.L., . .	Mooresfort, Tipperary, .	Munster Provincial Committee
Nolan, Colonel John P., M.P.	Ballinderry, Tuam, Co. Galway.	Connaught Provincial Committee.
O'Neill, Patrick J., J.P., .	Kinsealy House, Malahide, Co. Dublin.	Leinster Provincial Committee.

The members of the Agricultural Board hold office for three years.

The work of the Agricultural Board will be referred to throughout this Report in connexion with the various schemes of the Department which were undertaken with their advice and co-operation.

The Board of Technical Instruction.

The Board of Technical Instruction, as constituted by Section 10 of the Act of 1899, consists of the following members :—

(*a*.) Three persons appointed by the County Council of each of the County Boroughs of Dublin and Belfast;

(*b*.) One person appointed by a Joint Committee of the Councils of the several urban county districts in the County of Dublin; such committee consisting of one member chosen out of their body by the Council of each such district;

(*c.*) One person appointed by the Council of each County Borough not above mentioned;

(*d.*) One person appointed by the Provincial Committee of each Province;

(*e.*) One person appointed by the Commissioners of National Education;

(*f.*) One person appointed by the Intermediate Education Board; and

(*g.*) Four persons appointed by the Department.

The appointment of members to act on this Board was completed by the end of May, and the Board, as thus constituted, consisted of the following:—

Name.	Address.	By whom appointed.
Barbour, Frank,	Hilden, Lisburn, Co. Antrim,	Ulster Provincial Committee.
Beamish, Ludlow A.,	Ashgrove, Queenstown, Co. Cork.	The Department.
Clancy, Most Rev. John, D.D., Lord Bishop of Elphin.	Sligo,	Connaught Provincial Committee.
Daly, Alderman John, Mayor of Limerick.	Mayor's Office, Limerick,	Limerick County Borough Council.
Dempsey, Alderman James.	York-road, Belfast,	Belfast County Borough Council.
Dowd, Alderman Patrick,	32, South City Markets, Dublin.	Dublin County Borough Council.
Finlay, Rev. T. A., M.A.,	University College, Dublin,	Leinster Provincial Committee.
FitzGerald, Alderman Edward.	Geraldine-place, Cork,	Cork County Borough Council.
Fitzgerald, George F., F.R.S.	7, Ely-place, Dublin,	The Department.
Goff, William G. D.,	Glenville, Waterford,	Waterford County Borough Council.
Harrington, Timothy, M.P.	6, Cavendish row, Dublin,	Dublin County Borough Council.
Jaffé, Sir Otto, J.P.,	10, Donegall-square, S., Belfast.	Belfast County Borough Council.
Lally, Very Rev. P., P.P.,	Galway.	The Department.
M'Learn, Sir William, Mayor of Londonderry,	Carrickmore House, Londonderry.	Londonderry County Borough Council.
Martin, Rev. William Todd, D.D.	College House, College-green, Belfast.	Intermediate Education Board.
Monteagle, Rt. Hon. Lord, K.P.	Mount Trenchard, Foynes, Co. Limerick.	Munster Provincial Committee.
Musgrave, Sir James, Bart., D.L.	Drumglass House, Belfast.	The Department.
Pile, Rt. Hon Sir Thomas, Bart, Lord Mayor of Dublin.	Mansion House, Dublin,	Dublin County Borough Council.
Starkie, William J. M., LITT.D.	Tyrone House, Marlborough-street Dublin.	Commissioners of National Education.
Taylor, Alexander,	46 Agnes-street, Belfast,	Belfast County Borough Council.
Wallace, William,	Dunleary House, Monkstown, Co. Dublin.	Joint Committee of Councils of the County Dublin Urban Districts.

As in the case of the Agricultural Board the members of the Board of Technical Instruction hold office for three years.

The duties of the Board of Technical Instruction are analogous to those of the Agricultural Board. They "advise the Department with respect to all matters and questions submitted to them by the Department in connexion with Technical Instruction." By Section 16 of the Act the annual sum of £55,000 is set aside for these purposes. This sum must, in accordance with the statute, be divided into two portions to be determined by the Department with the concurrence of the Board. Of these portions one must be distributed, in proportion to their respective populations, among the six County Boroughs to be applied by the respective Councils of these Boroughs in aid of Schemes, approved by the Department, for the purposes of Technical Instruction. The other portion must be applied, subject to the concurrence of the Board, for the purposes of Technical Instruction elsewhere than in the County Boroughs, and "in making or aiding in making such inquiries, and collecting or aiding in collecting such information as the Department may think important for the purposes of Technical Instruction." The determination of the portions into which the sum of £55,000 is to be divided has effect for a period of three years from the commencement of the Act, and at the end of that period, and of each subsequent period of three years, a new determination must be made by the Department, subject to the concurrence of the Board.

It will thus be observed that once the triennial division of the sum of £55,000 has been effected in the manner described, the Board has no further function as regards the portion allotted to the County Boroughs. This portion is applied by the County Boroughs subject to the approval of the Department alone. As regards the portion allocated for Technical Instruction elsewhere than in County Boroughs, and for making inquiries and collecting information, the concurrence of the Board is necessary before the money can be applied by the Department for any of the purposes mentioned.

The important work of the Board, and the valuable and cordial assistance which they have given to the Department on all the matters submitted to them will be treated more fully under the section of the Report which deals with Technical Instruction.

Reference may be made here to the very great loss which the Department and the Board sustained in February by the lamented death of their valued colleague, the late Professor George F. Fitzgerald, F.R.S., F.T.C.D. Professor Fitzgerald was appointed on the Board by the Department, where his eminent scientific knowledge, his intimate acquaintance with educational problems, and his unwearying interest in Technical Instruction, were of inestimable value. His loss was most severely felt.

The Consultative Committee of Education.

By Section 23 of the Act provision was made for the formation of a Consultative Committee of Education, consisting of the Vice-President of the Department as Chairman, and one person appointed by each of the following bodies:—The Commissioners of National Education, the Intermediate Education Board, the Agricultural Board, and the Board of Technical Instruction. This Committee was fully constituted early in May as follows:—

Name.	Address.	By whom appointed.
The Right Hon. Horace Plunkett, M.P., Vice-President of the Department.	Department of Agriculture and Technical Instruction, Dublin.	Ex-officio.
The Most Rev. William J. Walsh, D.D., Archbishop of Dublin.	Archbishop's House, Drumcondra, Co. Dublin.	Intermediate Education Board.
William J. M. Starkie, LITT.D.	Tyrone House, Marlborough-street, Dublin.	Commissioners of National Education.
Rev. W. Todd Martin, D.D.	College House, College-green, Belfast.	Board of Technical Instruction.
T. P. Gill, . . .	Department of Agriculture and Technical Instruction, Dublin.	Agricultural Board.

The function of the Committee is to "co-ordinate educational administration." It is scarcely necessary to dwell on the importance of this function, which will become of still greater importance as the work of the Department develops. The operations of the Department as regards Science teaching and Technical Instruction, whether as applied to agriculture or to urban industries, have an intimate bearing on the work of primary, secondary, and higher education, and the success of the Department's work must largely depend on the manner in which the various educational systems of the country are worked in harmony. This harmony it is the object of the Committee to promote. Already they have assisted in bringing about the arrangement which has been arrived at between the Intermediate Education Board and the Department for co-ordinating the course in Science and Drawing of the two bodies, inasmuch as it was at their suggestion that the Board appointed a Sub-Committee to confer with the Department on the question. As a result of the conference between this Sub-Committee and the Officers of the Department the Intermediate Education Board decided that Natural Philosophy, Chemistry, and Drawing shall be replaced in their programme by one subject, viz., "Experimental Science and Drawing," and that after the present year the Board shall not, until further notice, hold any examination in this subject, but shall accept the inspection and, where necessary, the examination of the Department.

2. FUNDS OF THE DEPARTMENT.

1. The Endowment Fund.

The special endowment for the purposes of Agriculture and other industries and Technical Instruction which the Department administer in co-operation with the above-mentioned Boards, consists of an annual income of £166,000, derived from the following sources:—

	£
Local Taxation (Customs and Excise) (Ireland) (hitherto paid to the Board of National Education), ...	78,000
Irish Church Temporalities Fund (subject to reduction in certain contingencies), . . .	70,000
Equivalent of salaries of Irish judgeships abolished, &c., ...	12,000
Equivalent of expenses of Glasnevin and Munster Institutions (hitherto paid through Board of National Education), ...	6,000
	£166,000

In addition to these annual sums there were received, in the first financial year, capital sums of £19,890 5*s*., and £166,886, the former representing the accumulations previous to April 1st, 1900, of the savings in respect of Irish judgeships abolished, and the latter being a payment on account of a capital sum payable to the Department from the Local Taxation (Ireland) Account under (*g*) of Section 15 of the Act.

From those capital sums and portion of their first year's annual income the Department were able to invest £200,000 in Local Loans Stock bearing interest at 3 per cent., and repayable at par in 1912.

2. Parliamentary Grant.

With the powers and duties transferred to the Department from other Departments under Section 2 of the Act, the grant provided by Parliament for the payment of the salaries and other expenses in connexion with the officers and institutions transferred, and the grants in aid of the Cattle Pleuro-pneumonia Account, have been brought into the Vote for this Department; as has, likewise, the annual grant in aid of £25,000 payable to the Congested Districts Board, which has hitherto been provided for in the Vote for the Chief Secretary's Office.

From the Parliamentary Vote the salaries and other administrative expenses of the new Department are also paid.

The institutions for which the Department are now responsible, and which are maintained from its Parliamentary Vote, are the following:—

	£
Museum of Science and Art,	13,292
Royal College of Science,	8,744
Metropolitan School of Art,	2,801
National Library of Ireland,	3,732
Royal Botanic Gardens,	3,842
Total,	*32,411

The grant for Science and Art in Ireland, and the grant in aid of Technical Instruction in Ireland as defined by the Technical Instruction Act of 1889, which have hitherto been administered by the Board of Education, South Kensington, have been transferred to this Department; but the transference was not to take place until 1st April, 1901. Provision for these grants will henceforth also appear in the Parliamentary Vote for the Department.

The Accounts of the Department for the financial year ended 31st March, 1901, will be found in the Appendices.

3. ADMINISTRATION OF THE ENDOWMENT FUND.

1. Agricultural Board's Surplus.

The surplus of the Endowment Fund, after providing the annual sum of £55,000 for Technical Instruction, and certain amounts specified in Section 16, is administered by the Department subject to the concurrence of the Agricultural Board. The most important of the specified amounts referred to is the annual sum of £10,000 for Sea Fisheries, the expenditure of which does not require the concurrence of the Board. The Department have, nevertheless, consulted the Board about this expenditure as if it were not excepted.

The purposes to which the surplus administered with the concurrence of the Agricultural Board may be applied are defined in Section 30. They are "the purposes of agriculture and other rural industries," and "sea fisheries."

The former include "the aiding, improving, and developing of agriculture, horticulture, forestry, dairying, the breeding of horses, cattle and other live stock and poultry, home and cottage industries, the cultivation and preparation of flax, inland fisheries, and any industries immediately connected with and subservient to any of the said matters, and any instruction relating thereto," together with "the aiding or facilitating of the carriage and distribution of produce."

The "purposes of sea fisheries" include "the construction of piers and harbours, the supply of fishing boats and gear, investigation into the habits of fish and methods of fishing, instruction in fishing, the encouragement of any industries immediately connected with, and subservient to fishing, the supervision and protection of fishing grounds, and the enforcement of by-laws relating to fishing."

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* Exclusive of expenses met by Board of Works and Stationery Office.

The expenditure of the surplus falls into two main natural divisions—

(1) Moneys which are required for purposes of a general character, affecting the country as a whole.

(2) Moneys which are required for local schemes.

This distinction is duly regarded in the administration of the funds by the Department and the Board.

In regard to local schemes, it is of importance to have it clearly understood that aid is intended to be applied to schemes, and not to localities as such. The function of the Department is not to distribute money to localities, but to apply financial support and skilled assistance to approved schemes for giving effect to the specific purposes, for the attainment of which the Department has been created. The schemes must be approved by the Department, and they must, save in exceptional cases, be aided by local contributions before the Department's funds can be applied to them. But the contribution from the Department's funds is not in any fixed proportion to the local contribution. Provided the Department and Board are satisfied that the locality does its duty, that the actual local contribution is in just proportion to the genuine capacity of the locality to contribute, they are free to aid schemes in that locality with regard only to the merits of the schemes, to the needs of the locality, and to the relation of the schemes with the general system for the country as a whole of which they are a part. To such schemes in any county, or to the extension of such schemes, or to any particular feature of them, the Department's contribution may be increased or lessened in future years according as the needs of the locality, the success or non-success of parts of the schemes, the amount of the local contributions, or other circumstances may determine.

Any portion of the Endowment Fund, under this head, not expended in any financial year, is accumulated by the Department in accordance with Section 16 (4), and may be used in future years for expenditure upon general or local schemes, at the discretion of the Department and the Agricultural Board.

The Royal Veterinary College of Ireland.

Schemes to which the Board's Surplus is applied are principally described in the section of the Report dealing with Agriculture; but one application of the Surplus may more fittingly be referred to here. By Section 16 (1) (*a*) of the Act, it is provided that, out of the money placed at the disposal of the Department by Part II. of the Act, a capital sum "which shall not, save with the concurrence of the Agricultural Board, exceed £15,000, shall be applied for the purpose of providing suitable buildings, fittings and appliances for the Royal Veterinary College of Ireland." The application of this money is subject to such conditions as the Department may require. The Governors of the College accordingly submitted, for the consideration of the Department, their proposals, which were approved on the understanding that the charter was modified in such respects as would, in the opinion of the Department, have the effect of making the position of the College more satisfactory in its relations with the veterinary profession and the agricultural interests of the country generally. The Governors accepted the suggestions of the Department, and the amended charter, which is being prepared, provides that the Department shall have adequate representation on the governing body of the College.

In submitting the plans and estimates of the new College, for the approval of the Department, the Governors drew attention to the fact that the sum of £15,000 already referred to would not be sufficient to provide suitable buildings, and they expressed the hope that the Department would be able to supplement substantially this sum out of the funds at their disposal. The matter was duly brought before the Agricultural Board, and, on the recommendation of the Department, the Board, being sensible of the very important function which the College will be called upon to discharge in reference to the live stock industry of the country, sanctioned an additional grant in aid of the buildings and equipment of the College of £5,000, over and above the capital sum of £15,000 provided under Section 16 of the Act.

2. The Annual sum of £55,000 for Technical Instruction.

As already described, the annual sum of £55,000 allocated by the Act for the purposes of Technical Instruction, must be divided into two portions, of which one portion must be distributed in proportion to their respective populations between the County Boroughs in aid of approved schemes of Technical Instruction, and the other for schemes of technical instruction elsewhere than in the County Boroughs, and for certain other purposes mentioned in the Act.

In making or recommending grants in aid of local schemes of Technical Instruction, the Department are guided by the same general principles of action which have been described in dealing with the grants administered with the concurrence of the Agricultural Board.

The principal business at the earlier meetings of the Board of Technical Instruction was to assist the Department in making the first triennial division of the annual sum of £55,000. The matter was very carefully discussed in all its bearings, and as a result the sum was divided as follows:—£25,000 for the County Boroughs, and £30,000 for Technical Instruction elsewhere than in the County Boroughs, and for the other purposes mentioned in the Act.

It has already been explained that the sum allocated to the County Boroughs must be distributed "in proportion to their respective populations." When the triennial division was made, the question at once arose as to whether the population according to the Census of 1891, or the estimated population at the time of the division of the money, should be taken as the basis for determining the share of each County Borough. The Department submitted the question for legal advice, and were informed that the estimated population as existing at the time of the division of the money should be taken as the basis of distribution. It was found, however, that it was not possible to make the estimate required until the Census figures for 1901 became available, but in order to permit the County Boroughs to proceed with their schemes without delay, the Department suggested that the best procedure would be to reserve 25 per cent. of the sum of £25,000 allotted, and as to the residue, to ascertain the respective shares of the County Boroughs taking as the basis of distribution the Census figures of 1891 (over the areas of 1900). The amount reserved could be retained until the Census figures of 1901 became available, and then distributed in such a manner as to compensate for any inequality that might have resulted from the division of the money according to the Census returns of 1891. This suggestion was adopted, and the County Boroughs were duly notified.

As regards the sum of £30,000 allocated for Technical Instruction elsewhere than in the County Boroughs, it soon became apparent that none of the local authorities would have schemes in operation before the close of the financial year, on 31st March last. The Department accordingly proposed to the Board of Technical Instruction that so much of the £30,000 allocated for purposes of Technical Instruction elsewhere than in the County Boroughs as was not expended before 1st April, 1901, should be set aside to form a reserve fund for such general purposes as providing assistance for equipment and apparatus where special assistance seemed desirable. The Board concurred in the suggestion of the Department, and a reserve fund was accordingly formed. The Department have also decided, with the concurrence of the Board to set aside annually during the first triennial period, out of the £30,000 referred to, a sum of £3,000 as a provision for such schemes as may be more economically and, in general, more advantageously worked by the Central Authority, *e.g.*, Senior Scholarship schemes, Expenses of Junior Scholarship Examinations, provision for training teachers, and cognate purposes.

*4. ORGANISATION OF THE DEPARTMENT.

Reference has already been made to the essential unity of purpose which underlies and controls the various functions of the Department, and constitutes an intimate relationship between them. This is the leading principle of the Agriculture and Technical Instruction Act. Though the Act creates new machinery and new powers, a large portion of its intention is to bring order and simplicity into branches of administration where co-related action was not properly provided for before. The statutory aim of the Department is to promote, as far as may be proper to such a Department, the industrial development of the country. To that purpose all the various powers entrusted to it not only are capable of being applied, and should be applied, but it would be impossible to exercise any of them thoroughly well in the general interest unless they were all included, as they are here, under a common direction. The amalgamation of analogous functions hitherto scattered amongst several departments was an obvious step towards efficiency and economy, and the manner in which this part of the work has been given its place in the system of the Department will be found explained in the account of the Branches amongst which that work has been distributed. As to the new or more special work, or those of the transferred functions, which have more direct bearing upon the new work than others, such as the administration of the Science and Art grant, and the management of the Royal College of Science, the Metropolitan School of Art, the Museum, at every step the need for co-ordinate administration is apparent. In a country like Ireland, where there are not extensive manufactures, and where the majority of the provincial towns are as much rural as urban in their economic characteristics, the problem of Technical Instruction, for example, must largely be a problem how to provide a population mainly agricultural with a training that will not only fit them to give new developments to agriculture, their chief existing industry, but that will give them in addition aptitudes for industries which do not yet exist, and which their trained intelligence must be the principal factor in creating. Thus it happens that, from the Science and Art Institutions in Dublin down to the secondary school in a little semi-rural town in the provinces, the agricultural and the industrial features of technical instruction are continuously interwoven, and must be considered with a common thought for both. Similarly with regard to the action of the Department in matters other than educational. In the stimulation of local industrial enterprise in town and country; in the extension of rural industries supplementary to agriculture; in the supervision of the conditions under which cattle, and agricultural and industrial produce are carried by the public companies; in the administration of the laws for guarding the interests of such produce in the markets; in the dissemination of information; in scientific and other inquiries and researches —in all these purposes the same general idea must be constantly operative. It is found to be not less necessary where different industrial interests sometimes clash, and where, without effective co-ordination, one interest might be pursued by its own partisans or its own experts unduly at the expense of another. Thus the Department during the year has been obliged to safeguard before Parliamentary Committees the interests of the inland fisheries as against promoters of enterprises for the use of water power and the generation of electricity, and to do this safeguarding in such a manner that these enterprises should find no obstacle to their introduction into Ireland but those which may belong to the commercial and other difficulties naturally inherent in them.

The organisation of the Department has been devised with a view to giving effect to this administrative principle. The different sections of its work have been allotted to a number of separate Branches, and each Branch is manned by a specially qualified staff, and has at its head an Assistant Secretary or Head of Branch, who is a highly trained expert or administrative officer. Each Branch is thus in a position to concentrate its entire energy and expert skill upon its special task, as if it were a distinct department in itself, while at the same time its work is brought into harmony with the general purpose of the Act, and gains from having behind it the resources of the whole Department. The machinery for general direction and co-ordination of the work of the Branches is provided in the offices of the Vice-President and of the permanent Secretary.

The clerical work of the Department, and certain administrative work is placed under the general supervision of the Chief Clerk, while its financial work is entrusted to a Clerk in Charge of Accounts.

The branches amongst which the Department has so far divided its work are the following:—

I. Agricultural Branch.
II. Technical Instruction Branch.
III. Fisheries Branch.
IV. Statistics and Intelligence Branch.
V. Veterinary Branch.
VI. Accounts Branch.

Other branches will be formed as the organisation of the Department proceeds.

The value of guiding its action by the advice of the best-qualified of those who are directly concerned in the business to which that work relates, is fully recognised by the Department. They have, accordingly, as it seemed advisable, appointed Special Advisory Committees of Experts, and invited conferences of representatives of the classes concerned. Thus Special Committees on Live Stock, on Horse Breeding, and on Flax, have been appointed in connection with the Agricultural Branch, and a special Committee on Fisheries has been associated with the Fisheries Branch.

PART II.—POLICY AND PROCEDURE.

It will be understood that during the first year of their existence, the Department were largely occupied in constructing and organising their machinery, and planning and laying down the principles of their future action. Before recording in detail the work of the year, it will be desirable, in this First Report, to indicate some of the main lines of the policy on which they propose to act.

1. LOCAL INITIATIVE AND CENTRAL DIRECTION.

Principles of Administration.

In the scope of work and effective powers which have been confided to them, involving a commission to attempt not only to develop the industrial resources of the country, but to influence, in vital ways, the education of the people, the Department realise how much may depend for good or ill upon the manner in which they discharge their trust. Feeling the weight of this responsibility, they have resolved to proceed with the utmost possible caution, even at the risk of sometimes taxing the patience of local authorities and others by an insistence on certain principles, and by a hesitation to approve of schemes which have been submitted to them until they have satisfied themselves, so far as may be possible, of their soundness in all particulars. The Department consider that in such matters a false step in the beginning would be dearly purchased by the country. Two principles of procedure are clearly indicated, as well by the situation the Department have to deal with as by the legislation they are required to administer.

1. Administration of this kind must fail in its best result unless it seeks to evoke and fortify the self-reliance, enterprise, and sense of responsibility of the people. Both economic and social laws dictate this principle.

2. In encouraging local initiative and responsibility the danger, on the other side, of an indiscriminate multiplication of unrelated local schemes must be guarded against by a due conservation of the principle of central direction. It is the duty of the Department to keep in mind the national as well as the local point of view, and to bring to bear on schemes and problems that power of co-ordination and that expert aid which the resources of a Central Authority, acting and thinking with and for the whole country, can command. The importance of this principle is well illustrated in the efficiency of the Continental systems of State aid for Technical Instruction and Agriculture, on which the constitution of this Department has been to some extent modelled.

Both these principles are provided for in the Act in such a way as mutually to strengthen each other. The advisory

Boards of the Department, who control the expenditure of its Endowment Fund, are mainly constituted by the local self-governing bodies of the country. A Department so constructed should be in a favourable position for guiding, in regard to its work, the action of local bodies over whom it exercises no compulsory powers, and who are entirely free to adopt or take no part in the schemes of which it may approve. On the other hand, the local authorities are empowered by the Act to raise rates and borrow money for the purposes of schemes approved by the Department; and in order to evoke such local effort and co-operation for local schemes, Section 16 (6) of the Act provides that the Department "shall not, in the absence of special considerations, apply or approve of the application of money under this section to schemes in respect of which aid is not given out of money provided by local authorities, or from other local sources."

Relations with Local Authorities.

The Agriculture and Technical Instruction Act is, so to speak, built into, as well as out of, the system of representative local government established by the legislation of 1898. The Department, paying due regard to this fact, has studied, in administering the Act, and in so far as the nature of its functions permitted, to extend the responsibilities of the local authorities, and it looks forward to having their aid in many ways in strengthening the spirit of economic and social self-help amongst the people generally. The Act contemplates that the six County Boroughs should formulate their own schemes; and the Department desires, in the area outside the County Boroughs as well, to stimulate local initiative in the preparation of schemes of Agriculture and Technical Instruction. It delegates to them, moreover, the local administration of such schemes, and has assisted them to construct a machinery for this administration in the shape of County Committees for Live Stock, and for Agricultural and Technical Instruction, and Urban Committees for Technical Instruction. This course has an educational value of importance, inasmuch as, on the one hand, it gives the Department the benefit of local opinions and experience, and, on the other, it brings the local bodies themselves into contact with the difficulties of the problem to be dealt with. It helps, besides, to produce in the country a sympathetic understanding of the necessarily tedious process by which sound reforms of this kind are accomplished.

With a view to rendering its advice more effective and better informed, the Department consider it wise to establish, through their officers, direct and personal relations with the local authorities, societies, schools, and those classes of the people generally with whom their work has to do. It is felt that correspondence alone would be an inadequate means of explaining a new and complicated Act, and of working out highly technical schemes with bodies who are under no obligation to adopt them. The Department have, consequently, in the person of their representatives, been ready to visit every local authority, confer with them on the spot, and aid them with expert advice after thorough inspection and examination of local conditions. Practically all the County Councils and Urban Councils or Technical Instruction Committees in Ireland have thus been visited by the Department—some of these bodies many times—and very numerous personal conferences have taken place at the offices in Upper Merrion-street between the Department's officers and representatives of local committees. The great majority of the schools and educational institutions in Ireland above the primary grade have likewise been visited by their Inspectors. It is gratifying to have to report that the relations thus established have proved of the most satisfactory kind. While they create a human link between the Department and the local bodies, they keep the Department itself, as no other method could, in intimate touch with the actual conditions of the country. In no other way would it have been possible to make such progress with the local authorities as has been made. Some idea of the nature of this progress may be gathered from the fact that every local authority in Ireland resolved to raise a rate for the purposes of the Act within the first financial year; and that the only large general schemes which the Department issued to the local authorities from itself—those for Encouraging Improvement in the breeds of Horses, and of Cattle, Sheep, and Swine—were adopted by all the County Councils in Ireland, save two. It will take considerable time and a certain amount of inevitable friction before a system of complex and very technical administration is got to work, but it is felt that, in the manner described, a mutual confidence will steadily be engendered between the Department and those with whom it has, locally, to deal.

2. DIRECT MEANS OF ACTION.

It is thus fundamental in the constitution of the Department that the interest and responsibility of the people themselves, through the central Boards and through the local Councils and Committees, should be engaged in its work. The chief means by which it is hoped that work may in time be accomplished will be found indicated in more detail in the account which follows, of what has actually been done during the period covered by this Report. These means it will be seen, fall, roughly speaking, into two broad divisions—direct measures for improving agricultural and industrial conditions; and indirect measures, which may be generally summed up in the word, Education. To these may be added a third most powerful agency, the value of which, for the advancement of agriculture, its own experience has demonstrated to the Department, viz., Organisation. Nearly all of these means, it is important to observe, must be slow in their results. Even the direct means involve, for the most part, bringing various applications of science and, in the case of industries, of art as well, to the aid of our agriculture and industries, and that cannot, from the nature of the case, be a simple or rapid process. It will be therefore necessary for the Department, for some years to come, to depend a good deal upon the patience and the faith of the Irish public as regards the work which they will together be endeavouring to do.

Amongst the direct means are such schemes as those for encouraging improvement in the breeds of live stock, for itinerant instruction of the farmers themselves with direct reference to the cultivation of their own holdings, for the development, through itinerant instruction and otherwise, of rural and other industries, and all the efforts which can be made for improving the transit of agricultural and industrial produce and the conditions under which such produce is placed on the markets. These measures are detailed principally in the section of the Report devoted to "Agriculture." Though some subjects, coming within the functions of the Department, such as transit and forestry, would require special legislation for their treatment on comprehensive lines, the Department is able to do much that is useful in connection with them with its present powers. An account of the course of action it has inaugurated with railway and shipping companies and consignors towards bettering the transport of produce is given in the section, "Transit and Markets." Under the same head will be found a description of the measures so far taken by the Department for the protection of Irish butter and other produce against fraudulent competition in the markets, both in Great Britain and this country. Steps have been taken, and others are in contemplation, for improving the position of the sea and inland fisheries in such directions as opening new markets, the extension of loans for the purchase of boats and gear, the technical instruction of fishermen, the erection of hatcheries for the artificial propagation of salmon and trout, experiments in oyster culture, the protection of the fishing grounds from illegal trawling and poaching. These operations are referred to under the head of "Fisheries," No action of any consequence has, as yet, been taken with regard to tree-planting, but schemes for work with the County Councils in this particular are being matured. There is an important class of industries, which it is hoped may be promoted in Ireland, that require co-operation between rural and urban communities. To the coming together of town and country in such enterprises for their common benefit the Department will attach importance, in view of the peculiar circumstances of Ireland, and the difficulty which the task of establishing a system of technical instruction meets here, through the lack of industries in provincial towns.

The important part which the organisation of a Government Department can play in bringing the manufactures and resources of a country under the notice of capital by means of exhibitions, and in spreading, by the same means, information useful to trade and industry at home, is recognised by the Department. They accordingly, with the concurrence of the Agricultural Board, resolved to take the opportunity afforded by the Glasgow International Exhibition, and to erect there an Irish Pavilion, in which would be shown a representative exhibit, principally of the smaller, or cottage, industries which have been developed in Ireland of recent years, and of mineral and other resources. The Congested Districts Board co-operated with the Department in this project; and the railway and shipping companies, who found it a valuable opportunity for bringing Irish scenery and travelling facilities to the attention of tourists, aided in the work. The Irish Pavilion was, necessarily, in all the circumstances, conceived on a modest scale, but the authorities of Glasgow have declared it one of the most attractive and successful features of the Exhibition, and it has already brought about a marked increase in the demand for the classes of products exhibited. To enhance its utility the Department published, in connexion with the Pavilion, a Handbook, entitled, "Ireland: Agricultural and Industrial"—a publication which has had a large sale. Further particulars as to this volume, as well as with regard to the collection and dissemination of information generally by the Department, are given in the section of the Report dealing with "Statistics and Intelligence."

Belonging also, rather more to the direct than to the indirect means, are those scientific investigations, surveys, and experiments related to agriculture, fisheries, and other industries, which can only be rightly carried out for a country with the aid of the State. Several undertakings of this kind have been set on foot during the past year by the Department, details of which will be given further on. One of these investigations which dealt with the terrible and, hitherto, mysterious epidemic amongst the calves of the Munster dairy farms, has already had a strikingly successful result. In this case the Department acted in co-operation with the highest available scientific authority, and the discovery in which the inquiry resulted will be of invaluable utility to stock-breeders, not only in Ireland but in every country. Monsieur Nocard, the French veterinary bacteriologist to whom the investigation was entrusted, has discovered absolutely the cause of the malady, and has prescribed an effectual and simple method for its prevention. When it is borne in mind that the mortality amongst calves in the affected districts has in many years reached an average of 80 per cent., it will be seen that this one investigation, undertaken during the Department's first year of existence, will have been the means, if its lesson be applied, of saving immense annual sums to the farmers of Munster, as well as of making a valuable addition to the stock of veterinary knowledge.

These various direct means of assisting the development of agriculture and industry will be pursued by the Department with careful regard to the limits which it is desirable to observe, even in Ireland, where exceptional action in this respect is justified, in the relations of the State with the domain of private enterprise. It is a chief aim of the Department to stimulate, rather than to weaken, the spirit of industrial self-help, and its action will be governed by this idea. Its endeavours will be mainly confined to removing the obstacles which at present hinder in Ireland the due exercise of initiative in industrial matters, and to creating a state of things in which private enterprise can act with confidence and freedom.

3. EDUCATIONAL POLICY.

To the educational part of its work the Department looks as the most powerful and abiding means of promoting the end in view. In a country which is so industrially depleted as Ireland, and in which the economic drain is still continuing, the direct measures for improving industry above referred to, however valuable, and however they may extend as the work progresses, and as legislation creates new opportunities, cannot by themselves alone produce very great or deep results, and large expectations based upon them may lead to disappointment. But a proper system of education, which, while paying due heed to the training of the character and the will, will train the intelligence to deal with concrete things as well as with ideas, and which will give to the generation receiving it skill and knowledge that will bring out and make them conscious of their own powers and resources in practical affairs, cannot have disappointing results. Experience has amply proved that it is to the individual and national resourcefulness and the confident character thus developed by an educational system, more than to any other cause, countries which have in recent times achieved marked industrial success owe their progress. The Department, accordingly, feel that however imperfect other forms of effort may be, or whatever the conditions which may prevail in Ireland, if the people be placed in full possession of the benefits of such an educational system, they will have the instrument of their own salvation in their hands. Supplemented by such a system moreover, and directed by a public opinion instructed on economic subjects, all other forms of State action in relation to industry become immensely more effectual. For this reason the Department lay stress on the educational work which they have been commissioned to do in co-operation with the other educational authorities of the country.

The educational duties of the Department include the administration in Ireland of the Grant for Science and Art (an elastic Parliamentary grant the amount of which depends on how far it is utilised by schools and classes;) the management of institutions for higher teaching in science and art, amongst them the Royal College of Science, the Metropolitan School of Art, the Botanic Gardens, and the Museum; and the organisation of a system of technical instruction applied to industries and agriculture. In undertaking these duties the Department will act on the view that the education of a country should be considered as a whole, and that it is a grievous fallacy to expect sound results from any special scheme which is not made an organic part of the general educational system. The experience of countries which have given most attention to the connexion between education and industrial development shows that the best results in this direction are due to the secondary school and the university or higher technical college. When the secondary school, on, at least, one of its "sides," is permeated with the practical spirit, and deliberately related to the real economic and social needs of the country, it becomes possible to produce leaders of industry, that is, men who have learned to apply intellect and science, as well as enterprise, to the callings of commerce, manufactures, and agriculture; and when properly-trained leaders of industry are available for a country reforms in all the grades of practical education inevitably follow. Again, that great undeveloped resource, the latent intellect and artistic and mechanical skill of the working classes of the country cannot be rightly got at until the primary schools, rural and urban, fit their pupils to take direct advantage, whether of the general schools or the technical schools of a complete system, with their respective avenues of progression. There cannot be the most useful educational ambition in a country until the pupil of talent in the humblest elementary school feels that the way is open for him, so far as educational opportunity can open it, to the highest careers in industrial, agricultural or academic life. The primary school, the secondary school, and the university are thus regarded as having their part to do for what is commonly called technical education, as well as the specially technical institutions.

The Department enters the secondary schools of the country, as the administrator of the Science and Art Grant, principally from the point of view of general education, which is the first concern of the secondary school, and secondarily from the point of view of those specialised applications of education to which the secondary school should lead. With these objects in mind it has entirely changed the system on which the Science and Art grants have hitherto been administered, and rendered these grants, it is hoped, more favourable to freedom and individuality in teaching, and more suitable to Irish conditions. The new Programme of Experimental Science, Drawing, Domestic Economy, and Manual Instruction, which the Department has issued, is intended to provide, in the first two years, the secondary school with that minimum of scientific discipline and training of the hand and eye which educationists now generally hold should be a part of any broadly-conceived scheme of general education. This minimum, it is believed, may be given without injury to the essential function of the humanities in the curriculum of every secondary school. The Department do not desire that Ireland, at this period of transition in her educational history, should fall into the mistake which, it is beginning to be recognised, has been committed elsewhere, of underestimating the value of the human and ethical parts of education even in the direct production of utilitarian results. The Programme, in its subsequent years, will permit of specialisation according as pupils are intended for various practical callings. Most fortunately for Irish educational reform, the Department have had the full co-operation of the Board of Intermediate Education in this matter. That Board have adopted the Department's Programme, made it part of their own curriculum for the current year, and resolved to accept the inspection and examination of the Department in the subjects which the Programme includes. By this means a great impetus will have been given this year to the introduction of practical features into general secondary education, and the way prepared for specialisation at later stages in technical directions. To facilitate the schools in taking up the new Programme the Department gave a series of special free courses to teachers, this year, in centres in Dublin, Belfast, and Cork. These courses were attended by teachers from 196 secondary schools.

Besides this development of secondary schools, and the promotion of evening continuation schools, to provide for the education of boys whose schooling has been abruptly cut short by their going into employment, the system of the Department will include the establishment, through the medium of existing schools and otherwise, of special Technical Schools for Industries and for Agriculture. In connexion with agriculture — apart from the difficulty of getting teachers, which must continue, with diminishing intensity, for a few years, until a supply of expert agricultural teachers has been trained—the organisation of such technical schools presents a comparatively simple problem. Agriculture is a great and living industry, universally pursued in Ireland, and whether these agricultural schools arise in connexion with secondary schools, or are independently organised—and probably they will appear in both forms—their problem will be to adapt their teaching to the service of the industry which is at their door. Their chief perplexity will be, how, with most economy and practical effect, to diversify their work so as to suit the different agricultural conditions of different parts of the country, and the different classes of service, that of the working farmer, that of the agricultural scientist, for which knowledge is required.* It is otherwise with technical instruction intended for the purposes of industries other than agriculture. Outside the large cities where Technical Instruction schemes are being successfully inaugurated, there are few towns in Ireland where any such industries exist. Moreover, a striking difference, which it is most important to appreciate, thus appears between the problem of technical instruction in Ireland and that problem in Great Britain. In the towns of England and Scotland technical instruction has but to adapt itself to existing and flourishing manufactures. In no locality does any doubt or question arise about the industries to be served. The scheme of technical instruction is called on to provide its pupils with skill and knowledge, mainly imparted in the evening, to be applied to industries which they are working at during the day. In the majority of the provincial towns of Ireland, beyond the artisans connected with the building trades, there are seldom workers enough engaged in any industry to which technical instruction could properly be applied to furnish pupils for a class at a technical school. This somewhat baffling difficulty, which confronts the Department in the organisation of its educational system, it is desirable to have fully realised. It means that part of the problem of technical instruction in such localities must be, how to promote industries to which it may be applied; and that, consequently, through exceptional Irish necessities, the Department may be obliged to give more attention to this mode of action than it might otherwise have found it desirable to do. It means, moreover, that, outside the large cities, that phase of technical instruction which approaches more nearly to the direct teaching of trades or handicrafts to workers insufficiently prepared in the elements of science and art will for a time have to be more resorted to in Ireland than is the case in more developed countries. But this, in its irregular applications at least, will be but a temporary phase. Technical instruction in its true and permanent conception, as a specialised but organic part of general education, whose aim is so to train a man as to render him morally, intellectually, and physically master of his best aptitudes, and able to apply these aptitudes in every fitting direction that opportunity offers, will always be before the mind of the Department. It is from men so trained, from their inventive brains, their skilful hands, their developed and self-trustful personality, conscious of powers, and seeking for opportunities to use them, that the true advancement of a nation's industries must come. This has been the history of technical instruction, even in countries which, like Ireland, have started without industries, and which have also had to try the temporary phase referred to.

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* The lines on which the Department propose to promote a system of agricultural education in Ireland are described in a memorandum by the Vice-President in the Appendices, and are illustrated in the section of the Report under the head of "Agriculture."

For the purposes of higher technical and scientific education, the Department has under its control, maintained from Imperial funds, the institutions already mentioned, which have hitherto been known as the Science and Art Institutions. It is intended by the Department to remodel and adapt all of these institutions to purposes which it was impossible for them adequately to serve under former circumstances, and to make them living factors in the promotion of practical education and the industries and agriculture of the country. The Royal College of Science, as it has been called up to the present, will, it is proposed, be made the chief technical college for Ireland, a real "polytechnicum" or college of science applied to agriculture and industries; and for this purpose it will be re-organised, provided with new buildings, and equipped in such a fashion as to bring it, at least in quality, level with the best technical colleges. Soon after the Act came into force a Departmental Committee was appointed, by minute of the Vice-President, to consider and report as to the best means of carrying out this reform. This Committee consisted of Sir W. de W. Abney, K.C.B.; Mr. T. P. Gill, Secretary of the Department; Captain T. B Shaw, then Assistant Secretary in respect of Technical Instruction; Mr. S. E. Spring-Rice, C.B., Auditor of the Civil List; Mr. J. G. Barton, C.B., Commissioner of Valuation for Ireland; Sir James Musgrave, Bart., of Musgrave Bros., Belfast; and Mr. W. B. Harrington, of Harrington & Co., Cork. Their labours resulted in a detailed Report which will be a valuable guide to the Department in reorganising this College. The Metropolitan School of Art, when, in due time, it is reconstituted and brought into full activity in the work of the Department, ought to become what Ireland has so long lacked, a centre of life and inspiration for Irish Art, and especially for Irish Art applied to industry. The Irish people are said by those who have special knowledge of artistic handicrafts to possess still the aptitudes which the collection of Irish antiquities in the Museum shows to have belonged to their ancestors; and it is quite probable that in the class of industries in which the individuality of the worker imparts a special element of value they may achieve particular success. A national School of Art, encouraging local freedom, aiming at distinctive national qualities, having at its hand, as part of its inspiration, the beautiful and suggestive objects in the Museum, taking its place in a system of education in which the teaching of Art was sympathetically encouraged in every part of the country, might have a great influence on Art and industries in Ireland; and such a centre it is hoped what is now called the Metropolitan School of Art may become. The Science and Art Museum, in Kildare-street, which already possesses collections of great value to the interests of science, industries, and art, and the other Institutions will be developed similarly, so as to assist in their several ways the work with which the Department has been entrusted. Detailed Reports dealing with the year's work of the Royal College of Science, the Museum of Science and Art, the National Library, and the Botanic Gardens, have already been issued by the Department, and are reprinted as an appendix to the present Report.

4. LOCAL ORGANISATION.

Finally, the Department is deeply convinced that in Ireland, and especially in relation to agriculture and to industries connected with agriculture, organisation has an essential part to play in the economic and social elevation of the people. Indeed, it would appear as if this agency of progress had, comparatively speaking, greater possibilities here, on account of the racial capacities for associated effort which our people display, than even in countries which, with the aid of organisation, have succeeded, for the time being, in driving Irish agricultural produce from its due place in the markets. The Recess Committee, in their enquiries, found that, in the countries whose competition Ireland feels most keenly, Departments of Agriculture had come to recognise it as an axiom of their policy, that, without organisation for economic purposes amongst the agricultural classes, State aid to agriculture must be mainly ineffectual, and even mainly mischievous; and that such Departments devoted a considerable part of their efforts to promoting agricultural organisation. Short a time as this Department has been in existence it has had some striking evidence of the justice of these views. As will be seen from the part of this Report dealing specially with Agriculture, it was only where the farmers were organised in properly representative societies that many of the lessons the Department had to teach could effectually reach the farming classes, or that many of the experiments intended for their guidance could be profitably carried out. Although these experiment schemes were issued to the County Councils and the agricultural public generally, it was only the farmers organised in societies who were really in a position to take part in them. Some of these experiments—such as that for the trial of new varieties of potatoes, where the societies paid, at cost price, for the samples of the special seed forwarded by the Department—could not be carried out at all except through such societies. In fact, over a large portion of its agricultural administration, it will be impossible for the Department, and it will be impossible for the County Councils, to work efficiently through isolated individuals. To attempt to do so would require a huge official staff, and a lavish expenditure of public money, and the result would be worse than waste, for it would be demoralising to the people and ruinous to that spirit of self-help, without an ample development of which Ireland will never become, in any sense, a progressive country. Thus, for the sake of efficiency in its educational work, and of economy in administration, the Department would be obliged to lay stress on the value of organisation. But there are other reasons for its doing so: industrial, moral, and social. Organisation is itself an agency of the greatest power, and an essential agency, in modern economic conditions, for the advancement of the agricultural industry, and of industries connected therewith, not only rural industries, but undertakings in which town and country share; and by its means capital, as well as directing skill and economic management, is made available both for such undertakings and for the most minute concerns of the smallest farmers and labourers to whom the use of helpful capital is possible through no other channel. Again, organisation is, perhaps, the most direct means of nourishing the self-reliance, and strengthening, so to speak, the moral back-bone of the people; for, through mutual help, it renders the self-help of a community at once effective, and brings the intelligence of the most intelligent to assist in promoting the interests of the most backward individual who engages in the common effort. But not the least important aspect of organisation for Ireland, where the isolation and dulness of rural life have something to do with the continuance of emigration, is its social side. Around every little society through which the people of a district have been successfully working out their industrial advancement and learning the powers which combination gives the simplest and most remote of communities, even in complicated business affairs, there is an inevitable tendency for combined efforts for other purposes to group themselves. In this way opportunities and means for educational improvement and social amenity are multiplied in places where such means and opportunities did not exist before; while the faculties of the people are expanded, their hopefulness is increased, and life at home on the Irish countryside is rendered more attractive. The Department, relying, as it does, for the ultimate improvement of the country mainly upon the developed character of the people, will encourage, so far as it may, organisation which is calculated to have such results.

Such are the general considerations which have guided the Department in the first year of its work, and which are intended to guide it in future years.

PART III.—DETAILS OF DEPARTMENT'S OPERATIONS, 1900-01.

1. AGRICULTURE.

Half the financial year had expired before it was possible to provide the Agricultural Branch with some of the principal members of its staff, owing to the difficulty of finding in these countries available experts of the highest authority for this field of administration. The Assistant Secretary in respect of Agriculture, under whose special charge is the work of this Branch, was not appointed until August, 1900. By far the greater part of the time of the Agricultural Branch so far has been occupied in assisting County Committees to develop and co-ordinate their schemes. The work of explaining the powers and duties of County Councils and Committees of County Councils under the Technical Instruction Acts of 1889, 1891, and Agriculture and Technical Instruction (Ireland) Act, 1899, involved a very large amount of correspondence, and, as already explained, for the double object of supplementing this, and enabling the agricultural experts to get into touch with Local Committees and representative farmers of the district, it was decided that, whenever possible, an expert should visit each county, meet the Committee, and discuss with them how the purposes of the Act might best be carried out. With this object in view, inspectors visited every county several times prior to the final adoption of the schemes. It is mainly due to this method of initiating the work that such a large amount has been accomplished in the short time available.

(*a*.)—IMPROVEMENT OF LIVE STOCK.

The most important schemes carried out by the Department through its Agricultural Branch during the year was that of the encouraging improvement in the breed of live stock, particularly of horses and cattle. Substantial progress was made, largely due to the fact that the work was popular, the subject being more easily understood and the results more tangible and direct than in the case of some of the other purposes for which the Department's endowment may be employed.

General Objects of the Live Stock Schemes.

In formulating their Live Stock Schemes, the Department's main object was to promote improvement in the breeds of the country by encouraging private enterprise in the breeding of pure-bred animals, and in the introduction of new sires, and to do this in such a way that the accompanying advantages should be principally secured for the smaller farmers. Since interests of national importance were at stake—such, for example, as the maintenance of the high reputation of Irish horses, the improvement of the feeding qualities of the store cattle, and the milking properties of dairy cows—and as these interests require for their protection, in some particulars, that the stock of the country should be considered as a whole, and should not, in public schemes for its improvement, be attacked by the introduction of strains likely to have injurious general effects on the national breeds, it was necessary that these schemes should contain certain principles of uniform application to the whole country. It was, therefore, necessary that the Live Stock Schemes should emanate from the Central Authority, while, in particulars other than their national features, they might be modified in accordance with local opinions and circumstances. In order to have the assistance of the most representative expert opinion in Ireland in the formulation of these schemes, the Department appointed two Special Advisory Committees—one for Horses and the other for Cattle, Sheep, and Swine.

It was too late in the season when the various duties in connection with the first year's schemes were undertaken to permit of the County Council Live Stock Committees being specially consulted in reference to them; but it is intended in future years to obtain the suggestions of the County Committees before issuing the schemes.

For some years before the establishment of the Department, a sum of £5,000, under the Probate Duties (Scotland and Ireland) Act, 1888, had been annually administered by the Royal Dublin Society for the improvement of horses and cattle in Ireland. In accordance with section 16, sub-section 6, of the Agriculture and Technical Instruction (Ireland) Act, 1899, the Department may not, in the absence of special considerations, apply money to schemes in respect of which aid is not provided locally. The allocation of the public funds at the disposal of the Royal Dublin Society for the improvement of horses and cattle is not similarly restricted, and such an arrangement—as it offers a prospect of public funds being made available without local effort—is calculated to have the effect of making local authorities indisposed to provide a contribution for the Live Stock Schemes under the Act. To obviate this effect, and also the danger of waste which the administration of public funds for similar objects by two independent bodies might entail, the Department invited the Royal Dublin Society to co-ordinate their schemes for the improvement of live stock with those formulated by the Department for a like object, and the Department at the same time requested its Advisory Committees to keep this consideration before them in framing their recommendations. After an exchange of views, the Society resolved to award half the sum entrusted to them in premiums to stallions on the Department's register, and to offer the remainder at their Spring Show in premiums to pure-bred bulls to applicants from those counties which offered a contribution to the Live Stock Schemes of the Department.

Horse Breeding Scheme.

The Horse Breeding Scheme, as outlined by the Advisory Committee and approved by the Agricultural Board, provided for the registration of suitable and sound thoroughbred and agricultural sires, and the selection of a number of the best brood mares in each county to be served by these sires. The owner of a registered stallion is entitled, under the scheme, to a fee of £3 for each selected mare put to his stallion. The mares selected were the property of persons deriving their means of living from farming, whose valuation did not exceed in the poorer counties £150, and in the more wealthy counties £200.

In all 410 stallions were offered for registration, of which 298 were thoroughbred and 112 of the agricultural type. This being the first year of the Department's operations, it was deemed desirable to spare no pains in making a searching examination of the stallions offered for registration, and, accordingly, before any of the stallions offered under the scheme were accepted, the Department's inspectors had to certify, (1) as to suitability, and (2) as to the soundness of the animal. Notwithstanding the shortness of the time available, the work was completed and a register published in March, which contained the names and pedigrees of 97 thoroughbred and 31 agricultural stallions. Upwards of 1,800 free nomination tickets of £3 each were offered at 150 shows of mares held during March and April, and nearly 1,700 of these tickets were issued.

In addition to subsidising stallions by means of £3 nominations to mares, the Department offered in a few counties, where there was an insufficient number of stallions for the purposes of the scheme, premiums varying from £50 to £100. The reluctance of owners to lease their stallions operated against this part of the scheme, and only three premiums were given.

Cattle Breeding Scheme.

The scheme for encouraging improvement in the breeds of cattle provided for premiums of £12 each to approved pure-bred yearlings and two-year old bulls of any breed or breeds selected by the respective County Live Stock Committees These premiums were awarded at the principal Agricultural Shows in Ireland, and at special local shows held for that purpose. Unfortunately, owing to the restrictions on the importation of cattle from Great Britain, which the Department were obliged to impose in consequence of outbreaks of foot-and-mouth disease in several English counties, the number of bulls available fell far short of the expectations of the County Committees. Of 737 premiums offered, 353 were taken up, but it should be stated that in addition to the premiums provided out of public funds under the Department's scheme, the Royal Dublin Society provided out of the public funds at its disposal 169 additional premiums of £15 each, and, by consent of the Department, farmers were advised to secure, if possible, in preference to a county premium, one of those offered by the Royal Dublin Society.

It is believed that the potential value of the unallotted premiums in inducing farmers to take up the work of breeding pure-bred stock, or to go further afield for pure-bred bulls will be greater than the actual results of the premiums taken up.

Several of the counties were able to allocate all their premiums, but a number of counties were less fortunate. The irregular distribution of the available bulls throughout the country was not wholly due to lack of enterprise on the part of the farmers in the less fortunate counties; it was also due to the fact that the schemes were not, in many instances, sufficiently advertised.

Loans for the Purchase of Bulls and Stallions.

In order to encourage farmers of small means to provide themselves, either with a registered stallion or a premium bull, a sum of money was allotted by the Department, with the concurrence of the Agricultural Board, for the purpose of granting loans for the purchase of approved sires. The money was lent at 2½ per cent. interest, and is payable, in the case of stallions, in five annual instalments, and, in the case of bulls, in two annual instalments. A total of £2,036 was given to 61 persons, £780 being for stallions, and £1,256 for bulls. It was a condition precedent to the granting of these loans that the animal should be insured for its full market value. The high rate of insurance, however, operated against the success of the scheme in some counties.

The Department have had their Live Stock Schemes, and the schemes for enabling individual farmers, or groups of farmers, to obtain loans for the purchase of bulls, translated into Irish, for the benefit of the farmers in the Irish-speaking districts of the country. Copies of the schemes in Irish were sent to the County Council of each county containing such districts, and the Department intimated that, if requested by the County Council, they were prepared to send, free of expense, Irish-speaking organisers to explain to the farmers how they might avail themselves of the advantage of the schemes.

Sheep and Swine Schemes.

The schemes for improvement in the breeds of sheep and swine were not issued until May, 1901. They have already, however, been adopted by several counties, and it is expected that other counties will act similarly. The principal feature of these schemes is the awarding of premiums to approved sires, the use of which is partly confined to small farmers. A portion of the money may be given in prizes.

The number of well-bred boars in Ireland is not sufficient to warrant the Department in hoping that a very large number of premiums for these sires can be taken up for the next few years; but it is believed that the offering of the premiums will have the effect of inducing more farmers to go in for the breeding of pure-bred animals. Should it be possible to relax further the restrictions on the importation of swine from Great Britain, this class of live stock may also be improved by the importation in greater numbers of pure-bred boars.

Premiums and Prizes for Female Stock.

On the recommendation of the Advisory Committees, the Department adopted the principle of awarding premiums and prizes to female stock, as a further means of encouraging improvement in stock breeding.

Out of the joint funds placed at the disposal of the County Live Stock Committees, a sum of £4,276 was allocated by them with the approval of the Department for this purpose. The Advisory Committee on Horse Breeding, pointed out that that industry in Ireland is, to a great extent, injured by young mares being sold out of the country, thus leaving only second class animals for breeding purposes, and the Department adopted their recommendation that the prizes and premiums should be mainly confined to young mares from two to six years old, served by a registered sire, in the hope that farmers would thereby be induced to retain these mares. A portion of the money was, however, reserved for prizes to yearlings. In the case of cattle, the Committee recommended that prizes should be confined to milk cows, heifers, and calves.

Cost of the Schemes.

The total amount of money earmarked for the purpose of these Live Stock Schemes amounted to £23,983 which was offered to farmers in 31 counties, Cork and Mayo being the only counties which did not adopt schemes for encouraging stock breeding. Of this sum, the Department contributed one-half, except in the Counties of Donegal, Sligo, Leitrim, Galway, Clare, and Kerry. In these counties the Department contributed, in respect of the non-congested districts and those districts which are mainly non-congested, five-ninths of the total cost.

Considerable difficulty was experienced in administering these schemes in counties which are partly congested. Circumstances arose which made it desirable that a rate should not be raised in certain congested districts for the purpose of the Act, and as a rate raised under the Agriculture and Technical Instruction (Ireland) Act, 1899, must be raised equally over all the rural districts in the county, it was decided, in order to exclude from rating districts which are wholly or largely congested, to make use of the provisions of section 19, sub-section 2, of the Agriculture and Technical Instruction (Ireland) Act, 1899, in accordance with which a rate raised under the Technical Instruction Acts of 1889 and 1891, in a rural district may be made available for any of the purposes of agriculture and other rural industries, as well as for purposes of technical instruction. Moreover, a rate raised under the Acts of 1889 and 1891 may be made a "district" charge or a "county-at-large" charge, at the option of the County Council. The congested districts, not being co-extensive with rural districts, a further difficulty had to be overcome, viz., that when a rate was raised in the districts which are mainly non-congested, it was not possible to exclude the small congested areas within such districts. It was, however, found that the Councils of certain counties containing congested districts had already included in their estimates for the year a rate over the entire county for the purposes of the Agriculture and Technical Instruction Act. After due consideration, it appeared that the only practical method of meeting these difficulties was to exclude from the operations of the Live Stock Schemes the wholly congested and largely congested rural districts, "and to obtain from the Congested Districts Board a *pro rata* contribution in respect of the congested portions of the rural districts which are mainly non-congested." It was arranged that rates raised in the congested districts, other than the small congested areas in the mainly non-congested districts in certain counties included within the operations of the Live Stock Schemes, should be administered by the Congested Districts Board, subject to the approval of the Department. The Department and the Congested Districts Board have come to an understanding for conjoint action in regard to these and other Schemes under the Agriculture and Technical Instruction Act, in which congested districts may be concerned.

(*b.*)—AGRICULTURAL INSTRUCTION.

An outline of the Department's policy in regard to Agricultural Education will be found in the Memorandum by the Vice-President already referred to. A large proportion of the time of the officers of the Agricultural Branch has been occupied in organising schemes of technical instruction in agriculture. Many of these schemes, which comprise a variety of subjects, were only in the initial stage at the close of the financial year.

Agricultural Instruction at the Royal College of Science.

At the time the Royal College of Science for Ireland was taken over by the Department there was no provision for the teaching of agriculture in that Institution. It was felt, however, that no section of the Department's work was likely to be attended with more permanent results than that dealing with agricultural education, and considering the enormous importance of agriculture compared with the other industries of Ireland, it was decided early in the year that some provision would have to be made at the Royal College of Science for the highest form of instruction in technical agriculture, and for carrying on researches in the application of science to Ireland's chief industry. The Departmental Committee, to whom reference has already been made, were in agreement with this view. The organisation needed for such work has not yet been perfected, but preliminary steps have been taken for the establishment of an agricultural faculty in the College. At the beginning of last session six scholarships were offered to suitable young men who were prepared to go through a three years' course of training in the College, with a view to their future employment as instructors in technical agriculture. The applications for these scholarships were somewhat limited, but it is satisfactory to be able to report that six students were admitted to the College, and that these have satisfactorily gone through a first year's course, and a second year's course of instruction for agricultural students has now been added to the programme of studies at the College. Similar scholarships will be offered, tenable during the Session 1901–2, and it is hoped that in the following year a Faculty, dealing entirely with the technicalities of agriculture, will be added, when the first batch of students, who were admitted last session and who are now undergoing training in the sciences bearing on agriculture, will be ready to take advantage of it.

Albert Institute, Glasnevin.

The work hitherto carried on, under the direction of the Board of National Education in Ireland, has been continued at the Albert Institute, Glasnevin; but it has been decided that in future the educational facilities provided at this Institution shall be closely associated with the agricultural curriculum of the Royal College of Science. It will, in addition, serve as the chief centre for training male students in the higher forms of practical as well as technical agriculture, and at the same time be utilised as an experimental farm. For this purpose a special staff will be required, as well as new buildings or structural alterations in the existing buildings.

During the year there were the usual classes for male and female students. The attendances were:—

1. MALE STUDENTS:			
	Agricultural Class,	42	
	Creamery Manager's Class,	18	
		—	60
2. FEMALE STUDENTS:			
	Dairying, 1st Session,	59	
	Dairying, 2nd Session,	51	
		—	110
	Gross total,		170

The experimental work of the farm which has for many years been in progress, and from which excellent results have been obtained, will be continued, and, in addition, still further experiments of a similar nature to those being carried out in the counties have been instituted. The high state of cultivation in which the Farm has been maintained makes the fields unsuitable for manurial tests, and, accordingly, the new experiments are mainly concerned with the trials of the yield and quality of new varieties of crops, with a view to determining their suitability to the Irish climate.

The Munster Dairy School.

During the year under review no change was made in the system previously carried on by the Board of National Education for utilising the Munster Dairy School and Agricultural Institute; but owing to the demand that exists for a first class institute at which girls may be taught dairying and domestic science, the Department have resolved that in future this school shall be devoted entirely to this purpose. Part of the £10,000 set aside by the Act for extending the Munster Institute will be spent in extending and altering the present buildings, and in due course provision will be made elsewhere for the education of young men.

By thus utilising the Albert Institute for practical and technical agriculture, and the Munster Institute for dairying and domestic science, and by providing each place with suitable accommodation and equipment, as well as additional staff, a substantial increase in the educational output is anticipated, and each Institution will thus be enabled to carry on the work more efficiently. The present system necessitates a duplication of the staff and apparatus for dealing with alternate classes of male and female students. Under the proposed system the staff will be fully occupied, and full use will be made of the apparatus.

The following courses of instruction were given at the Munster Institute from 7th March, 1900, to 7th May, 1901 :—

Female Students Dairying.	First Session, ...	36
	Second "	35
	Third "	36
	Fourth "	35
Male Students.	Agricultural Class, . . .	25
	Creamery Managers, . . .	15

Itinerant Instruction in Agriculture.

The Department believe that technical instruction in agriculture and cognate subjects is destined to play a most important part in the improvement of agricultural methods in Ireland in the future, and that it will be necessary to provide greater facilities for agricultural education than can be given at the Albert and Munster Institutes, in which the training of a very limited number of young men and young women is carried on. Accordingly, the attention of the Department has been directed to the method by which this may best be accomplished, and after very long and careful consideration they have decided, with the concurrence of the Agricultural Board, that as soon as possible one or more itinerant instructors should be appointed to give practical and technical advice in each county on tillage farming, dairying, poultry rearing, fruit cultivation, bee-keeping, as well as on other subjects.

As early as October, 1900, the Agricultural Committee of County Tyrone submitted for the consideration of the Department detailed proposals on these lines. The scheme provided for the appointment of an itinerant instructor in agriculture for the county, whose duties during winter were to deliver addresses to farmers in selected centres on dairying, tillage farming, and allied subjects. The Department sanctioned these proposals, and agreed to contribute 50 per cent. of the cost. Lectures were delivered in the evenings in the local school-room or other suitable building, each lecture being followed by a discussion, during which farmers were invited to ask questions freely and discuss problems relating to their business. The county for this purpose was divided into five circuits, each containing five centres, at which, during the winter months, one lecture per week was delivered for four consecutive weeks, and during the day time the instructor visited farms convenient to each centre. During summer the scheme provided for a series of field experiments and demonstrations with seeds and manures, illustrative of the information which had been given in the lectures during the winter. His duties further comprised providing information by letter to farmers seeking advice on technical questions. In addition to the itinerant instructor in agriculture, the scheme provided for the appointment of an instructress in poultry-keeping, who was employed for the winter months, during which she gave lectures on poultry-keeping in the evenings and inspected poultry runs during the day, the arrangements being on similar lines to those for instruction in agriculture. The report of the work shows that the scheme was highly successful. The itinerant instructor in agriculture delivered over 100 lectures in the county, each of which was attended by an average of over 100 farmers, who showed their appreciation of the information provided by asking numerous questions relating to the technicalities of their daily work. The lectures on poultry-keeping were also well received, the average attendance throughout the course being about 144, and among other indications of the value of the instruction a large number of demands for settings of eggs of approved breeds of fowl were received. The success of the work in Tyrone augurs well for the future of similar work in other parts of Ireland.

County Down followed in December by appointing an itinerant instructor in agriculture, and the work there has proceeded on similar lines to that in County Tyrone, the average attendance at fifty lectures which were delivered in that county being ninety-five. The County Down Agricultural Committee also appointed an instructor in poultry-keeping early in the year.

In January, County Antrim appointed an itinerant instructor in poultry-keeping, and resolved to appoint, at a later date, a lecturer in agriculture. The County Kildare Agricultural Committee appointed an itinerant instructor in agriculture, who also acts as organising secretary for that county. More recently County Wexford appointed two instructresses in dairying and poultry-keeping, and County Meath has put into operation a scheme for encouraging agriculture by awarding prizes to small farmers who carry out the instructions of the judges sent round to inspect their farms and offer advice on the best methods of utilizing the land and crops. There is no intention, however, on the part of the Department, to consider that the problem of agricultural education would be solved even had every county in Ireland provided itself with an ideal instructor. On the contrary, serious thought and attention are being devoted to the question of providing the proper kind of agricultural education for the youths who are to be the future farmers of Ireland.

Instruction in agriculture on lines similar to those adopted by County Tyrone has since been sanctioned for County Westmeath, and several other counties are maturing their arrangements for commencing work next October. The difficulty, however, in meeting the requirements of the country in this respect lies in the lack of properly trained instructors.

Provision has, however, been made for the training of suitable young men, not only in the Royal College of Science, as above indicated, but also by means of special courses for young men who have already had a certain amount of training in technical agriculture.

To all schemes which have received their sanction, the Department, with the approval of the Agricultural Board, have contributed 50 per cent. of the entire cost.

Pioneer Lectures.*

In addition to the systematic lectures which have been delivered in the counties mentioned, a number of pioneer lectures on agricultural subjects were given in several counties during winter and spring. These were, for the most part, intended to show the character of the work that might be done by itinerant instructors, and on this account the lectures were given without a special contribution being required from the local authorities. Up to March 31st, pioneer lectures on agriculture had been delivered in each of the Counties of Fermanagh, Kerry, and Sligo, at centres selected by the County Committees. The subjects dealt with were winter dairying, feeding and management of milk cows, and the use of manures. The average attendances at these lectures were sixty-five in Fermanagh, forty in Kerry, and sixty-five in Sligo. The procedure followed at these meetings was to deliver a lecture accompanied by illustrations, and at the close to answer any question addressed to the lecturer by members of the audience. As care was taken to let it be known that these questions would be answered, farmers came prepared with a list of points on which they required information, and the lecturers report that in almost all instances the questions asked showed a real desire for information, not only on practical, but on technical agriculture. Difficulties with regard to these lectures were experienced in certain districts, owing to the want of adequate local arrangements, such as advertising and selecting suitable centres. A leaflet containing suggestions for the use of local committees has been prepared and issued by the Department, and better results are anticipated in the future. The demand for pioneer lecturers has since the beginning of 1901 continued, and, in addition to lecturers on agricultural subjects, it has been found necessary to employ lecturers on poultry-keeping and veterinary hygiene. Courses of lectures on these subjects have recently been given in the Counties of Donegal, Kildare, Cavan, Galway, and Tyrone.

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* See also p. 71, *et seq.*

(c.)—AGRICULTURAL EXPERIMENTS AND SCIENTIFIC INVESTIGATIONS.

Agricultural Experiments.

With the double object of demonstrating facts regarding the manuring of land and the use of varieties of crops which, however well known to scientists, are not generally known to the smaller farmers and of discovering how far, if at all, these principles require modification when applied to the soils and climate of Ireland, a schedule of suitable experiments was prepared and circulated. Among these may be mentioned experiments on the comparative value of different manures for the growing of meadow hay, which is by far the largest crop in Ireland; the use of manures for potatoes, oats, barley, turnips, and mangolds. On account of the technicalities involved in the carrying out of such experiments, they were entrusted only to the County Tyrone and County Down experts, and to a few private individuals and societies, who could be relied on to carry out the details accurately. A total of 293 experiments have been started, 94 of these being in County Tyrone, and 85 in County Down, and 114 in twelve other counties.

Basic Slag Experiments.

Basic slag is now recognised as one of the most effective and one of the cheapest methods of improving worn out and second class pastures. The use of this fertiliser in Ireland, where there is a constant drain on the soil by dairying, and still more by the sale of store stock, and where there is a comparatively small amount of manures introduced to compensate therefor, should be attended with excellent results. It was accordingly considered desirable by the Department that experiments of a simple character with this fertiliser should be conducted over as wide an area as possible, and, as the results on grazing land could not be definitely given in figures, that the experiments should be conducted at suitable centres, where the largest number of people could have an opportunity of seeing them. A total of 46 of these experiments have been undertaken in 22 counties. The complete results cannot be obtained for several years, but reports will be made from time to time.

Special Barley Experiments.

In 1900 there were upwards of 173,000 acres under barley in Ireland. The principal counties where this crop is cultivated are Wexford, Kilkenny, Cork, Tipperary, Queen's Co., King's Co., Louth, Kildare, and Carlow. It is believed that barley is capable of still wider cultivation, not only in these but in other counties, and this view is shared by Messrs. A. Guinness, Son & Co., Ltd., of Dublin, who are liberal supporters of the cultivation of barley in Ireland. An arrangement was come to between that firm and the Department, whereby a series of special barley experiments should be carried out, and Messrs. Guinness have generously offered to bear two-thirds of the cost, to supplement the field trials by tests of the brewing qualities of the different varieties of barley, and to determine the influence of manures on the malting qualities of the crop.

It has long been known that an application of suitable artificial manures will profitably increase the barley when the weight of the crop alone is taken into consideration, but as yet very few observations have been made with respect to the influence of manures on the malting quality of barley thus produced, and it is hoped that these experiments, which are now being carried out under such favourable conditions, will not only yield valuable information to barley growers in Ireland, but to barley growers in every country. Four varieties of barley and four kinds of manures are under trial at twelve centres, chiefly in Wexford, Tipperary, and Cork. The duty of carrying out the details of these experiments has been entrusted to the expert who is employed by the Irish Agricultural Organisation Society for similar work.

Special Potato Experiments.

In Ireland the potato crop is specially subject to injury from blight, and it is therefore of the highest importance that the varieties used should be those which are capable of resisting this disease. In the season of 1900 the blight made its appearance early and in a severe form, and those who had not sprayed their crops suffered considerable loss. The severity of the attack, however, revealed the fact that there were in Ireland at least two varieties of potatoes which appeared to withstand the disease in a marked degree. In addition to the investigations which the Department made in Ireland on the subject, a deputation of two practical agriculturists, members of the Agricultural Board, who were accompanied by one of the Department's experts, visited England and Scotland for the purpose of ascertaining which varieties had there shown the most disease-resisting qualities, and how far these might be introduced into Ireland. Information was collected regarding a very large number of varieties, but of the varieties grown in Great Britain, one only, viz., Sutton's "Reliance," was selected for an extensive trial. Unfortunately this potato is of the kidney type, and produces a small amount of foliage—properties which are very much objected to by Irish farmers. Of the other varieties reported on in Great Britain, a number apeared to be suitable, and these have been included in the experiments which are being conducted by the experts in County Down and County Tyrone, as well as by a few societies in other counties. It was thought, however, that the two varieties in Ireland which had to some extent withstood the blight, viz., "Black Skerries," a round potato, with a deep, purple skin, and "Champion II.," a rather late potato of the round type, together with the "Reliance," which had withstood the disease well in Great Britain, might be used for an extended trial in Ireland this year. Accordingly, it was decided, with the approval of the Agricultural Board, to purchase a quantity of each, and to ask farmers in every county in Ireland to purchase 1 cwt. of one or more of these varieties at cost price, to grow them side by side with the commoner varieties, and to report the result at the end of the season. The Department wish to record the gratifying fact that in response to this invitation, a very large number of farmers offered assistance in carrying out these experiments. "Champion II." is being tested by 1,569 farmers, "Reliance" by 369, and "Black Skerries" by 280, a total of 2,218 tests, spread over twenty-seven counties. The results will be awaited with considerable interest by everyone interested in potato growing in Ireland.

Advantages of Organisation.

In this, as in every other section of the Department's work, the greatest difficulty has been to secure a local organisation to disseminate information and to carry out the provisions of the county schemes. It would have been impossible for the Department to have dealt individually with the large number of farmers that took part in this work, and the success of this special experiment was mainly due to the existence of co-operative associations of farmers, organised by the Irish Agricultural Organisation Society. The advantages of organisation in such work as this, both to the farmers, for whose information the experiments are undertaken, and to the Department directing them, is illustrated by the fact that out of a total of 2,218 tests in 27 counties, 1,885 were taken up by co-operative societies, and the remainder by 333 organisations formed specially for the purpose.

Early Potato Growing.

From time to time attempts have been made in Ireland to produce early potatoes for the principal markets, but the perfection which the system of cultivating this crop has attained in other countries makes it a certainty that unless a very extensive change in the method of cultivation could be quickly effected in Ireland, it would be impossible for Irish farmers to develop in this direction a profitable industry. There are, nevertheless, certain parts of Ireland where the soil and climate appear to be as well adapted for this crop as the early potato-growing districts of England or Scotland With a view to ascertaining how far, if carried on under proper conditions, early potatoes could be produced in Ireland, a few trials were instituted last spring. Preparations for early potato growing, however, must have taken place during the previous summer, a fact which makes it impossible for this year's experiments to be in any way conclusive; but it is hoped that the trials which are now being made will form a useful lesson to those who have undertaken the tests, and enable them to carry out similar experiments more efficiently next year.

Fruit Growing.

Early last summer the Department's attention was called to the state of the fruit-growing industry in Meath and Louth, where, owing to the absence of facilities for disposing of the crop, and other causes, the industry had received a severe check. The Irish Agricultural Organisation Society had appointed two experts to examine into the condition of fruit growing in the Drogheda district. The report of the experts indicates that a very considerable improvement could be effected by better methods of cultivation and the introduction of new varieties of plants, and they recommended that the Department's attention should be directed to facilitating the erection of a jam factory for the purpose of dealing with the fruit on the spot. It was also pointed out that the cultivation of strawberries should be added to the varieties of fruit already grown. For this purpose, the Department, recognising that this is work which they should foster, decided to defray the cost of the investigations made by the experts, and, on their recommendation, four experimental plots in the Drogheda district have been planted with a variety of strawberry plants. These plots will be used for the purpose of giving instruction to enable the fruit growers of the district to add strawberry cultivation to their present system. The desire to organise a local market and to establish a jam and fruit-drying factory eventually took the form of a movement to erect a factory on co-operative principles, and a useful combination between citizens of Drogheda and the fruit-growing farmers of the district was formed with this object. A society has been registered under the Industrial and Provident Societies Acts, 1893, with a share capital of £5,000. The Department have agreed to aid this movement with the necessary technical advice regarding the machinery and processes of manufacture, as well as in the cultivation of fruit, and, in addition, to make a loan on suitable security.

The factory has now been erected, and the manufacture of fruit into jam is in progress. It is hoped that the work, initiated by the Department, of supplying technical instruction in fruit cultivation will be continued under the auspices of the County Council. Enquiries are being made with regard to the cultivation of fruit and the promotion of industries in connexion therewith, such as cider-making, in other parts of Ireland

Cheese-making.

The manufacture of cheese is not carried on in Ireland, the milk, when not required for human consumption, being in nearly all cases used either for butter-making or calf-feeding. Cheese-making is attended with some disadvantages, as compared with butter-making. In butter-making, for example, any errors in one day's manufacture can be corrected the next day. Not so with cheese-making, as some varieties of cheese require several months to ripen, and during that time the manufacturer may be daily repeating an error in the process of manufacture, either with regard to the temperature or the degree of acidity used, which may result in serious financial loss at the end of the season. In the manufacture of butter the milk is deprived of one constituent only, viz., fat. In cheese-making two constituents are removed, viz., fat and casein. Separated milk, which is left from the manufacture of butter, is, therefore, more suited for calf-rearing than whey, which is left from the manufacture of cheese. So long, therefore, as good prices can be obtained for store stock the Department are not prepared to recommend Irish farmers to take up cheese-making. Should there be a serious fall in the price of store stock, however, it is probable that the conversion of milk into cheese would be more profitable than butter-making. These are questions which cannot be decided without extended trials in the making of cheese in Ireland, and for this purpose the Department have rented a dairy of cows on a farm at Liscarroll, in County Cork. The dairy has been fitted up in a manner which might be imitated by the larger farmers, and the milk is being converted into Cheddar cheese, which, in due course, will be sent to a suitable market. A Report on the success of the experiment will be prepared and circulated for the information of farmers and others interested.

Calf Feeding.

Notwithstanding the importance of the store stock trade of Ireland and the large amount of experience which farmers have had in the rearing of calves, enquiries which the Department have undertaken from time to time show that there is a great lack of uniformity in the system of rearing calves in Ireland, which indicates that the most economical system of calf-feeding is a matter that has not yet been decided. The removal of the cream from the whole milk, which is the natural food for calves, makes it absolutely certain that in order that the best results may be obtained some concentrated food should be added to the separated, or skimmed, milk, to compensate for the fat abstracted. In order to provide information on this point, the Department have, with the concurrence of the Agricultural Board, undertaken an experiment, which they hope will be the first of a series. For this purpose fifty-six calves were purchased in spring and divided into four lots of fourteen each. While one lot is being fed upon whole milk and a second lot upon milk of the composition of skimmed milk with the addition of artificial food, two other lots are being fed upon separated milk, the fat in one case being replaced by cod liver oil, and in the other case by linseed cake. The calves are housed at a farm near Collooney, County Sligo, and the milk for the experiment is being purchased from a creamery, and used under conditions similar to those under which farmers work. In carrying out the arrangements for this experiment there were many difficulties to be overcome, but these have been in a large measure, though not entirely, surmounted.

Calf Mortality Investigation.

At the first meeting of the Council of Agriculture, in May, 1900, the Department's attention was called to the existence of a very serious mortality amongst young calves in Limerick and the adjoining counties. On enquiry it was found that the statement was not exaggerated. As showing the virulence of the disease, it may be mentioned that in one case which came under the notice of the Department a farmer lost forty-one out of forty-five calves, while another farmer only saved eleven, and these but poor specimens, out of a total of seventy-three. One of the Department's inspectors, who made a tour through parts of County Limerick, reported that a similar state of things existed at several farms which he visited. The disease took the form of what is known as "white scour," and in some cases a disease of the lungs was the cause of death. The Limerick County Council, at the request of the Department, convened a conference of representative farmers from the counties of Munster on the 8th December, 1900, to meet representatives of the Department, who submitted to them for their consideration a number of questions relative to the treatment of the cows and calves, and the history of the disease, with the object of ascertaining whether there existed a definite opinion with regard to the cause, and then, if possible, limiting the scope of the investigation. A most valuable discussion took place, which showed, amongst other things, that the mortality was not confined to very young calves, although a very large proportion died during the first week, but extended to calves several weeks old, and that the disease assumed two forms, enteric in the case of the younger calves, and pulmonary in the later stage. The evidence given strongly pointed to the conclusion that the disease was of a specific character, and was not directly due either to feeding or to the mode of treatment of the animals. The Department, accordingly, with the approval of the Agricultural Board, decided to carry out a thorough scientific investigation into the nature and cause of the disease, with the aid of the highest authority on the applications of bacteriology to veterinary science. In this undertaking the Department were fortunate in securing the services of the celebrated French veterinarian and distinguished pupil of Pasteur, Professor Nocard, of Paris, under whose direction they placed the investigation. A laboratory, suitably equipped for bacteriological work, was provided in Limerick, and early in April, 1901, Professor Nocard arrived in this country, and at once devoted himself to the work with true scientific enthusiasm. The Department associated with Professor Nocard Professor Mettam, Principal of the Royal Veterinary College of Ireland, and a staff of experts, who were appointed to inspect the farms at which outbreaks were reported, to procure specimens for the laboratory, and to make *post-mortem* examinations. As in former years, the enteric form of the disease soon made its appearance, and the death rate among calves became most serious. At the end of three weeks, Professor Nocard was able to announce that he had discovered the cause of the white scour, which he reported, was due to a bacterium that he had isolated and cultivated under artificial conditions. He further reported that he had inoculated a pure cultivation into a healthy calf, which, in a very short period, showed the usual symptoms of white scour, and expired at the end of thirty hours. Previous *post-mortem* examinations had shown that the great majority of the calves which died had an affection of the umbilical cord, and, eventually, Professor Nocard was able to establish this as the channel by which the disease entered the system. On his return to Paris, he there repeated the experiments, and confirmed the conclusion at which he had arrived at the laboratory in Limerick. He thereupon drew up, and the Department issued, instruction to farmers, which had for their object the treatment of the umbilical cord of newly-born calves, in such a manner as to prevent the entrance of the organism. The season being well advanced the Department could not give this remedy an extended trial. Information on the mode of treatment recommended was, however, distributed by the officials assisting in the investigation and by means of leaflets. Several farmers adopted the suggested method of prevention, and although the operation was not always performed strictly in accordance with instructions, a marked success appears to have attended the cases treated, many of which are, however, still under observation.

Towards the end of June, Professor Nocard again returned to the laboratory in Limerick, and still further prosecuted his enquiries, more particularly with regard to the pulmonary form of the disease, which he has now announced to be associated with, and in a great measure dependent upon, the attacks of white scour in the young calf. A full and detailed report will shortly be submitted to the Department by Professor Nocard and his colleagues, and further measures will be taken to make the preventive treatment more widely known next year, and to carry out a series of experiments in order to demonstrate its value.

One of the most important results of Professor Nocard's investigations is the discovery that the bacterium which is the cause of white scour does not appear to enter the system from the alimentary tract—an announcement which will be a source of great relief to stock-owners, who dreaded the introduction of the disease into their farms through the mixed milk brought from the creameries. All doubts on this question were set at rest by a simple, though perfect, experiment, by which Professor Nocard demonstrated that while the inoculation of the blood with small doses of a pure culture of the bacterium resulted in scour and death, large doses of the pure culture fed to calves in their milk produced no evil results.

These investigations are of the most far-reaching importance to all stock-owners, not only in Ireland, but wherever calf-rearing is carried on, and the Department have every confidence that with the hearty co-operation of the farmers, the mortality in calves which has so long been a scourge will entirely disappear, and the repetition of the enormous losses that have occurred will cease.

Professor Nocard, however, reports that the state of the calf-houses and the conditions under which calves are born in the County Limerick, are such that a great improvement in the hygienic surroundings under which cows and calves are kept is necessary. He strongly advocates that some measures be taken to secure greater cleanliness, both in cow-houses and calf-houses. If this were thoroughly attended to, the preventive measures which he has described may eventually become unnecessary.

It is interesting to record, at this point, that in connection with their cheese-making experiments on the farm at Liscarroll, County Cork, the Department decided to institute collateral experiments on the influence of cleanliness in preventing calf disease. For some years past the cows on this farm were not under the control of the farmer, but were let to a dairyman. Out of from forty to forty-five calves born annually, eighteen died in 1898, twenty-five died in 1899, and thirty-three in 1900. At the time the Department took possession, in the spring of 1901, eight calves had already died of the disease, and eight others had been sold when quite young, as it was considered impossible to keep them alive on the farm. At this juncture the Department took possession and immediately had the buildings thoroughly cleaned out. Since then nineteen cows have calved, and at the present time these calves are all alive, and appear to have escaped disease.

(*d.*)—DAIRYING—POULTRY—SEED-TESTING—TOBACCO—FLAX.

Inspection of Creameries.

Previous to the establishment of the Department two instructors had been appointed by the Board of National Education, and one by the Irish Agricultural Organisation Society, for the purpose of visiting creameries and supplying expert advice regarding the erection of or structural alterations in buildings, the purchase of new machinery, and general information on the most modern methods of butter-making. The work of these three experts has been continued and paid for by the Department.

In addition to supplying a large amount of information and advice by letter, the instructors made 381 visits to 248 co-operative, joint stock, and private creameries.

Loans to Creameries for the Purchase of Pasteurising Plant.

Under the creamery system which has been widely adopted in Ireland, the milk from a large number of farms is brought to one centre, and there separated. Of the separated milk each farmer receives for home consumption, and chiefly for calf-feeding, a quantity proportional to the new milk supplied by him. This method is attended with one great disadvantage, viz., that where the milk from any farm is unduly contaminated with the bacteria of lactic fermentation, which render milk sour, or, what is still worse, with the bacteria which cause infectious diseases, such germs are transmitted through the agency of the separated milk to every farm using the creamery. Not only are the farmers and the members of their households liable to suffer thereby, but creamery butter may become the medium of spreading disease widely over the country. To guard against this, as well as to improve the quality and the uniformity of butter, it is desirable that every creamery should be equipped with pasteurising plant for heating the milk to the required temperature to destroy pathogenic, as well as lactic and other comparatively harmless bacteria.

To encourage creameries owned by farmers to erect pasteurising plant and to demonstrate its advantages, the Department resolved to grant a limited number of loans to defray part of the cost of suitably equipping a few creameries. For this purpose a sum of £5,000 was, with the consent of the Agricultural Board, set aside, to be lent at 3 per cent., on the security of the collective bond of the members of the Society. This sum was immediately applied for and allocated, subject to the specifications and the security offered by each Society being considered satisfactory by the Department.

Home Dairying.

Towards the encouragement of home-dairying, the Department have continued the system adopted by the Board of National Education of employing itinerant dairy instructresses, and have given special courses of instruction at the Glasnevin Farm and the Munster Dairy School. The services of the itinerant instructresses were availed of chiefly in the Province Munster. During the year seventy-two classes were held, and instruction was given in the best methods of home butter-making. County Wexford was the first Local Authority to take up this work. Two instructresses in butter-making have been appointed for that county, and the Department have contributed to this, as to the other approved schemes, 50 per cent. of the actual cost.

In order that those farmers who carry on home-dairying should be in a position to make the most of their milk, to turn out butter of a quality equal to that supplied by creameries, and at the same time have fresh separated milk for calf-rearing, it is desirable that they should be provided with hand-separators, but for this purpose many of the smaller farmers have not sufficient capital. The Department have now under consideration a proposal to organise and to advance capital to Agricultural Credit Associations, from which small farmers may obtain loans for purchasing separators, as well as other expensive utensils.

Poultry Keeping.

The poultry-keeping industry in Ireland is one of very great importance, and capable of substantial improvement. The Department are of opinion that one of the best ways of stimulating interest and encouraging improvement in this industry is by the appointment of itinerant instructors, who will give lectures and practical demonstrations in poultry-keeping. Instructors have already been appointed for Counties Tyrone, Down, Antrim, and Wexford. As soon as qualified instructors have been secured, other counties are prepared to act similarly. Steps have been taken to train a number of suitable persons to act as instructors in this subject. For this purpose a special class in poultry-keeping has been held at the Albert Institute.

In addition to the appointment of instructors in the counties named, a number of pioneer lectures in poultry-keeping have been delivered free of cost. These were taken advantage of by Counties Antrim, Cavan, Kildare, Meath, and by Queen's County.

The question of the selection of centres for the distribution of eggs of approved breeds of fowl is now under consideration, but as it is necessary that private enterprise should not be interfered with, caution must be exercised in proceeding with work of this character.

Seed Testing Station.

Early in 1900 the question of making provision for the examination of seeds of farm crops was taken into consideration, and a temporary arrangement was come to whereby seeds were tested and examined by the Professor of Botany at the Royal College of Science. Experience gained during the spring of 1900 showed that valuable results might be accomplished by the establishment of a seed-testing station for Ireland, and, accordingly, early in 1901, it was definitely decided to provide such a station, which was again placed in charge of the Professor of Botany at the Royal College of Science, who has been supplied with suitable apparatus and assistance for the work. The fees charged to farmers are merely nominal, viz.: for a report on purity, 6*d.*; for a report on purity and germination, 1*s.*, and for a report on a seed mixture, 2*s.* 6*d.*, the prices charged to seed merchants being exactly three times these amounts. The station, although it has only been in existence for one season, has already been of considerable service, 387 samples having been submitted for examination. In addition to the testing of seeds, the station supplies information with regard to the identification of weeds and the diseases of plants free of charge.

Tobacco Cultivation.

The cultivation of tobacco in Ireland has for a long time had its advocates, and at the urgent request of those interested, the Department, shortly after its formation, took the matter up. They secured a French expert in tobacco-growing, who, under the direction of the Professor of Botany at the Royal College of Science, undertook a number of experiments on tobacco culture. Owing to the spring being well advanced before it was possible to begin operations, the experiments were not as conclusive as might be desired. Tobacco was grown at twenty-five centres, and provision was made at the Educational Farm at Glasnevin for a curing-room, where the leaves from the different centres were sent. It was found that a large number of leaves were entirely useless, either owing to defective growth, or to careless handling. Such leaves, however, as were suitable for curing were treated by the expert, and the produce sent to the manufacturers. The tobacco is now ready for sale. It has been decided to continue the experiments for at least another year, and, accordingly, ten centres have again been selected, and the crop now being grown promises to yield better results than last year. An additional experiment on the American system of growing tobacco has been instituted, and at the end of the season the Department hope to be in a position to give a definite opinion as to the prospects of cultivating this crop in Ireland.

Flax Growing Industry.

The Department have viewed with much concern the statistics regarding the flax-growing industry, which indicate that in recent years there has been a very serious falling off in the area under flax cultivation in Ireland. Indeed, the falling off has become so serious that there is great danger of this industry becoming extinct; and the failure of the home supply of yarns means a menace of the most serious kind to one of the greatest of the staple manufactures of the country. Early in the year a conference was arranged with a number of the chief flax-growers and flax-spinners in the North of Ireland, for the purpose of discussing what steps should be taken to encourage the revival of the flax-growing industry. The deliberations of the conference disclosed the fact that the comparatively higher price paid for flax from Holland and Belgium is mainly due to the care which is bestowed in these countries upon its preparation for the market, particularly in respect of the cultivation of the soil, the quality of the seed sown, the weeding and pulling of the crop, as well as the retting and scutching. An Advisory Committee was appointed early in the year, which recommended among other things that the Department should appoint an expert to give advice to scutch-mill owners, regarding the method of utilising their mills, so as to improve, if possible, the quality of the flax turned out by them. The Committtee also pointed out the injurious effects produced by the system of beginning scutching too early in the season, and, upon their suggestion a circular was issued to scutch-mill owners, urging upon them the desirability of postponing the scutching season until the harvest was completed. It was further recommended by the Flax Committee that statistics should be collected from a number of scutch-mill owners regarding the general system of cultivation, the origin of the seed used, and the returns therefrom. All these recommendations of the Committee were carried out. An expert scutcher was appointed, who made forty-four visits to mills, and gave advice to their owners, and statistics have been collected concerning the cultivation of flax in twelve centres. For the last four years the Flax Supply Association and the firm of Messrs. William Barbour & Sons, of Lisburn, have jointly employed three foreign experts for the purpose of giving instruction to farmers in the cultivation and after-treatment of flax. An intimation was received early in the year from this Association that it was not their intention, now that a Department of Agriculture had been formed, to continue this arrangement. The Department offered to pay half the cost of employing two of these experts, provided that the Flax Supply Association and a combination of the farmers in the districts to be benefited agreed to defray each one-fourth of the cost. To this the Flax Supply Association and the farmers concerned agreed, and a similar arrangement was entered into with Messrs. Barbour with regard to the third expert. One of these experts has been stationed at Dromara, in County Down; a second at Dunboe, County Londonderry, while the third was employed for part of his time at Broughshane, County Antrim, and later on in carrying on experiments in flax cultivation, to which further reference will be made. The Department have made enquiries regarding the character of the work carried out by these experts, and it has been demonstrated most clearly that the results of their work at Dromara and Dunboe were more than sufficient to warrant the continuation of their services. At these centres a great deal of interest has been aroused, a healthy rivalry among the farmers created, and the area under flax has been considerably increased. During the winter the expert at Dunboe was placed in charge of a scutch-mill, and similar arrangements were made at Dromara. The flax prepared under the Dunboe expert obtained on every occasion but one on which it was offered, the highest prices at the Coleraine flax market, which is one of the largest in Ireland. The Committee have considered the question of how far it would be possible to obtain further experts, and by that means to improve the flax industry in other parts of Ireland. Two of the present experts were imported from Holland, and the third came from Belgium; but, owing to the language difficulty, it is highly desirable that some young men in Ireland should be trained for this work, and, accordingly, the Department have under consideration the desirability of instituting, in connection with some convenient scutch-mill, a course of instruction for a few young men, to qualify them to take up similar work to that now carried on by the foreign experts.

The Flax Committee further advised that enquiries should be made into the character of the seed introduced into Ireland. On investigation it appeared that a large quantity of the seed brought into this country was not of the very best quality, the first quality seed being purchased earlier in the season by the foreign growers. The best seed was stated to be that known as Riga Child Dutch-seed, which is the immediate produce of Riga-seed sown in Holland. Samples of this, as well as of the Pernau Crown Brand of Riga-seed, were obtained, and, on these being examined with others at the Department's Seed-testing Station, it was decided, owing to the apparent superior quality of these two brands, to purchase 50 bags of each, and distribute samples amongst farmers at cost price, and further, to test these brands in some special experiments, instituted by the Department for the purposes. The seed thus imported was sold to thirty-five farmers, who have sown it, for comparison, side by side with the usual brands which they have been accustomed to purchase.

Should this seed prove to be superior to the ordinary brands, the question of affording facilities for acquiring information regarding the best markets for securing larger supplies of it will be considered. Home-grown flax seed is not used, but it was decided last year that in addition to the foreign seed, home-grown seed should be tested. This has also been done.

The results of a statistical survey which the Department made at the same time revealed the fact that very little is known in this country with regard to the best method of manufacturing the flax crop. Experiments have shown that so far as other crops are concerned, a suitable blend of artificial manures is superior to any one used singly.

The Department, accordingly, decided to institute a series of experiments, in order to ascertain what are the influences of the common fertilisers on the flax crop. These experiments were put under the charge of persons specially appointed for the purpose, with one of the foreign experts as an assistant. Altogether, ten experiments on the influence of manures, and ten experiments on the influence of seed, have been begun, and some valuable information will be obtained before next season.

The system of scutching in Ireland differs very largely from that carried on abroad, where the extra care devoted to handling ensures much less waste and loss of valuable fibre. In the foreign system of scutching, a much larger amount of time and money is spent in preparing the flax for the scutch-mill, as well as in preparation after scutching, all with a view to turning out a highly-finished article with the least possible waste. In Ireland a totally different system prevails. The flax-growers send their flax straw to the scutch-mills, and pay a fixed price per stone, the result being, it is alleged, that the scutchers are induced to perform their work at the very cheapest rate, and turn out the largest possible amount of flax from the straw—a system which tends to careless handling of the flax and much waste.

The Flax Committee, therefore, recommended that the Department should institute a series of very carefully-conducted trials of the two systems. It is certain that the expense of the foreign system of scutching will be greater than that of the method adopted in Ireland, but it is highly probable that the foreign system will yield flax of more value. Whether the gain in value will compensate for the increased expenditure is a question which awaits decision. One series of experiments has been completed, and as soon as suitable machinery and accommodation can be provided these will be repeated, and it is hoped that by the end of next season a definite opinion may be pronounced on the subject.

To create further interest in the scutching of flax, the Department considered the advisability of sending a few leading farmers and scutch mill-owners to the Continent, for the purpose of observing the methods adopted by their competitors. It was decided, however, that for this year it would suffice to send a deputation of only three persons for this purpose, and this has recently been done. In order to bring under the notice of a large number of flax-growers in Ireland the system adopted in Courtrai, a scutcher has been brought over from that district, together with a hand machine, such as is used in the cottages of the Belgian farmers in their spare time. This machine is being exhibited at work at the principal shows and fairs in the flax-growing districts, and much interest is being aroused thereby.

2. TECHNICAL INSTRUCTION.

(*a.*)—FUNDS AVAILABLE.

The £55,000 for Technical Instruction.

As pointed out in Part I. of this Report the annual sum of £55,000 which is administered by the Department, with the concurrence of the Board of Technical Instruction, is divided, in accordance with the requirements of the statute into two portions: one portion to be distributed, in proportion to their respective populations, among the six county boroughs, to be applied by them in aid of schemes of technical instruction approved by the Department; the other portion to be applied for the purposes of technical instruction elsewhere than in the county boroughs, and in making such inquiries and collecting such information as the Department may think important for the purposes of technical instruction.

The manner in which this division of the annual sum of £55,000 has been made by the Department, with the concurrence of the Board of Technical Instruction is fully dealt with on pp. 7, 12 and 13 of the Report. In general terms the result of the division is that, for the triennial period covered, an annual sum of £25,000 has been set aside for the purposes of technical instruction in the county boroughs, and an annual sum of £30,000 for the purposes of technical instruction elsewhere than in the county boroughs, and for the collection of information. Of the latter amount it was decided to set aside annually a sum of £3,000 for schemes, such as for senior scholarships, examinations, training of teachers, &c., which may be more economically and advantageously worked by the Central Authority.

In order to facilitate the co-ordination of the existing educational system with the system of technical instruction which it is proposed to construct, it was resolved that so much of the first year's sum available for districts other than county boroughs as remained unexpended before April 1, 1901, might be used in the form of grants for apparatus and equipment.

Vote from Agricultural Board for Rural Industries.

The Agricultural Board voted a sum of £3,000 out of the funds with which they had to deal, to be administered by the Department with the concurrence of the Board of Technical Instruction, for the purposes of general rural industries, and for technical instruction directly connected with such industries as distinct from technical instruction carried on regularly in schools or educational classes, and aided out of the sum of £55,000 above mentioned.

By Section 2 (1) (*e*) and (*f*) of the Agriculture and Technical Instruction (Ireland) Act, 1899—

The Science and Art and Technical Instruction Act Grants.

the administration of the grant for science and art in Ireland; and
the administration of the grant in aid of technical instruction, as defined by the Technical Instruction Act, 1889, in Ireland,

were to be transferred to the Department.

A list of science and art schools and classes, and a list of schools which received a grant in aid of technical instruction are given in the Appendices.

The administration of these grants was not transferred to the Department until the 1st April, 1901. The rules and regulations governing the administration and distribution of these grants were, until that date, those formulated by the Board of Education, South Kensington.

During the financial year ended the 31st March, 1901, the grants for science and art purposes in Ireland were as under:—

For science and art schools and classes, .	£ 3,840.
For elementary drawing, ...	£ 1,090.
And the grants in aid of technical instruction under the Act of 1889 amounted to, .	£ 3,044

(b.)—ENDOWMENT OF TECHNICAL INSTRUCTION BOARD.

Aims of Technical Instruction.

In the first part of this Report the principles guiding the Department in its educational work are explained; and it is made clear that the Science and Art Grant, which is now at the disposal of the Department, and which will be chiefly participated in by the secondary schools and evening schools, will be considered as having a necessary part to play in the advancement of a system of technical instruction, as well as the £55,000 specially set aside for technical instruction in non-agricultural subjects, and in addition to such sums as may be applied from the Surplus administered through the Agricultural Board for technical instruction in connection with agriculture. The agricultural side of technical instruction has just been dealt with in the preceding section of the present Part of the Report. Here reference is made specially to the industrial and commercial side of the subject.

While agencies for technical instruction may do much to assist existing industries and promote new ones, especially in those localities where commercial knowledge and experience are not, so to say, intensified, it should be fully understood that the main direct object of technical instruction is to give a training in those principles which govern industrial processes, and which determine the conditions of commerce and influence its flow. In fact the increase of useful knowledge, but especially the development of practical intelligence, of manual skill, and of an enlightened attitude towards industrial and commercial problems form the essential purposes of any system of technical instruction.

With such ends in view technical instruction, as a rule, assumes two forms.

(1) Instruction of a general nature, involving—(a) the teaching of practical science, (b) practice in exercises requiring skill of hand and eye, such as the various forms of drawing and designing and manual instruction in wood, metal, leather, and other kinds of material, and (c) instruction in Economics. This form of technical instruction is educational; it concerns itself with the development of practical intelligence, of the intelligent disposition, and of manipulative skill; and while it has no direct bearing upon one specific industry or commercial undertaking, it must be regarded as an essential preliminary for all. Technical instruction of this form is, as a rule, provided in day institutions for young persons who have not yet entered on an industrial or commercial career. It is the form in which the Secondary Schools of the country can chiefly contribute to the efficiency of a national system of technical instruction.

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(2) The second form of technical instruction has more direct bearing on specific industries: and to this form the term technical instruction is often restricted. Thus, in connection with agriculture, experiments may be conducted, and the lessons learned therefrom may be directly brought before the notice of farmers and others interested. Lessons may be given in engineering, materials tested on a commercial scale, and the methods of testing the efficiency of machinery and designing new forms practised in the school workshops. Students of the building trades may be taught the mechanics of structures, may test the strength and properties of materials, and learn how to design buildings with due regard to strength and ornamental features suitable to the object in view. The boot and shoe operative may be instructed in the anatomical construction and functions of the human foot; last making, cutting of skins, preparing of uppers, the mechanism of the machines, the use and construction of tools, materials, &c., would all form the subjects of lessons. Again, the business man may study the principles of book-keeping, the principles which underlie the flow of trade, commercial, shipping, or banking law, with statistics and economic science generally. In the same way household subjects may be taught, especially cookery, laundry, and dressmaking. In short, whenever and wherever an industrial, commercial, or domestic class of students can be found, instruction of a kind which enables them to do their work more efficiently, and thus holds out a prospect of improvement in earnings or position, should be one of the first considerations of a scheme of technical instruction.

These are the usual forms of technical instruction. But the conditions of industry, especially in the rural districts of Ireland, will for a time necessitate some departures from these forms in this country. The funds of the Department will, to a certain extent, and at first tentatively, have to be employed in assisting local effort in inquiries designed on the one hand to spread a knowledge of markets for existing industries, and of the readiest means of reaching them; and on the other to discover whether, say, the nature of certain soils, the natural products of a locality, the accessibility of power, or the conditions and amount of labour available, would favour the introduction of new and profitable industries.

It will thus be seen that this is a large and complex problem, and that the preliminary steps towards solving it must be slow and carefully measured, if permanent, and not a specious and ephemeral success, is to be secured.

Conditions of the problem.

As has already been pointed out, the establishment of a system of technical instruction in Ireland in connection with industries other than agriculture, presents exceptional difficulties. In England and Scotland the growth has been gradual, and in both these countries ordinary educational facilities existed which, it may be said without reproach, were far superior to those of Ireland. Before the widespread movement of some dozen years ago in favour of technical instruction, a system of science and art instruction had for many years been at work in those countries. Further, in both there were widespread and diversified industries. To establish a system of technical instruction which shall dovetail into and supplement the work of existing workshops and factories is an easy matter compared with establishing a system in a country in which there is a general absence of manufactures. The limitations which have been natural for technical instruction in England and Scotland would therefore, to a large extent, be out of place in Ireland: and to increase the difficulties of the problem in Ireland the Councils (County and Urban), through whom it is proposed, as far as possible, to work schemes of technical instruction, are themselves new to their duties; in fact, they are in their first period of office. The Department, however, as already indicated, desire to enlist the co-operation of local authorities as much as possible in this work, and have, with this view, delegated to them important functions—the preparation and administration of local schemes. In order to suggest action to the local bodies, and to serve as a guide, a pamphlet of "Suggestions" was issued to them at an early date; and it was followed later on by a memorandum on the powers of these bodies, and the procedure to be followed. In most cases, however, it was found both practicable and advisable to meet the local authorities in conference, and to explain to them the provisions of the Acts dealing with technical instruction, to make a statement as to the funds available, and to indicate the kind of action to be taken. In the great majority of cases, a scheme based on a survey of the local conditions and local institutions has, at the request of the local committees, been suggested by the Department. These conferences occupied, and are still occupying, a large part of the time of the Department's officers. An idea of the extent to which this is the case may be gathered from the fact that one inspector from the Technical Instruction Branch, between September, 1900, and March, 1901, attended sixty-two conferences, and visited 152 institutions in connexion with local schemes.

The County Boroughs.

Naturally, the six county boroughs (where the conditions of the problem were not unlike those of England and Scotland) first occupied a share of attention.

The County Borough of Dublin has not, so far, submitted a scheme for approval.

The County Borough of Belfast, shortly after the establishment of the Department, formed a Technical Instruction Committee of twenty-one members, fifteen of whom were members of the Corporation, and six were co-opted members. They also took a step of great interest, and worthy of imitation in other places, in forming two Consultative Committees, one of manufacturers, and one of educationists, to advise the Technical Instruction Committee. These Consultative Committees have been found of much service in the actual work of planning out the scheme for Belfast. Several conferences took place between the Department and the Technical Instruction Committee of Belfast, and, after some time, a comprehensive scheme for the borough was formulated as the result of these conferences and approved by the Department. This scheme involves the erection of a Central Municipal Technical Institute, at an estimated cost of £71,000. The money for the building of this Institute is being raised on loan by the Corporation, and will constitute part of the local contribution to the scheme.

At an early stage of the work the Belfast Council, on the suggestion of the Department, resolved to appoint a principal for their Technical Institute, so that they might have the assistance of an expert in the organisation of the scheme from the beginning, and in the work of stimulating the existing day and evening schools of the borough in the essential function they have to fulfil as feeders to the central institution when, a year or two hence, its doors are open to receive pupils. After a consideration of the various candidates who applied for the post, and whose names were submitted to the Department, the Council determined, with the approval of the Department, to appoint Mr. Forth, whose experience as principal assistant in the Manchester Technical Institute, seemed precisely of the character to suit the industrial conditions of a large manufacturing centre like Belfast.

The Technical Instruction Committee, at their earlier meetings, agreed that the efforts of the institute should be mainly directed towards the needs of the staple industries and trades of the city, while at the same time giving such instruction and knowledge as would facilitate the development of new industries. The instruction to be given will be open to both sexes, and will comprise complete evening courses in Science and Technology, the subjects being grouped under the headings: Preparatory, Mathematical. Mechanical Engineering, Naval Architecture, Textile Industries, Electrical Engineering and Applied Chemistry, commercial subjects, women's work, and Art. The Art department has been specially provided for: new buildings have been secured, and four masters, specialists in designing, drawing from life, painting and still life, and modelling, respectively, have been engaged. With a view to securing that, when built, the Institute would be filled with pupils in a condition to take advantage of special instruction, the Committee have gradually induced and enabled the various teaching institutions of the borough to take their proper place in the general scheme. The coming session will see an organised system of instruction at work in various schools in different parts of the city.

The following institutions have been merged in the general scheme:—The Government School of Art, the School of Applied Science (Model School), the Technical School (Hastings-street), the Evening Technical School of Science (the Royal Academical Institution), and the Working Men's Institute. No institution giving evening technical instruction now remains outside the general scheme. The Committee have further allocated £1,900 of the first year's grant in capital sums to day secondary schools for equipment and apparatus, in order to enable these schools to meet the difficulties of initial cost in connection with the Department's new regulations and programme.

The Borough Council of Cork have likewise done a good year's work. They formed a new Technical Instruction Committee, at the suggestion of the Department, and this Committee has formulated a scheme for the borough, of which the Department has approved. The scheme includes the establishment of a central Municipal Technical School, and a system of co-ordination with existing educational institutions similar to that which has been adopted in Belfast. There already existed in Cork the nucleus of a central Technical School in the Municipal Schools of Science and Art. These schools, better known as the Crawford Municipal Technical Schools, were presented to the City of Cork by the late Mr. W. H. Crawford, in 1884. The buildings are excellent in quality, and comprise Sculpture and Picture Galleries, Library, Lecture Theatre, Class Rooms for Art, and some rooms for Science and Technology. The Art School is fairly well equipped, and possesses a fine set of casts taken directly from the antique, under the personal supervision of Canova. These were presented by the Pope to George IV., and given by that King to the City of Cork. The buildings, however, will be quite insufficient in size for the proposed development. Accordingly, the Technical Instruction Committee in Cork are considering the best means of providing further accommodation for their central Technical Institute.

In Cork, also, the Municipal Council have appointed a Head Science Master for their proposed Technical Institute, who will render the same service as in Belfast in the organisation of the scheme, and in the aiding and stimulation of the existing schools, which should do their part as feeders to the central Institute when it is fully at work. The same procedure was adopted in the appointment of this principal, and, after due consideration of the candidates, Mr. O'Keeffe, a technological teacher who has had fifteen years' experience at Finsbury Technical College, London, was appointed by the Committee, with the approval of the Department.

Out of the first year's grant the Technical Instruction Committee allotted to different secondary schools a sum of £1,600 for equipment and apparatus, in order to enable them to serve the purposes of co-ordination with the system of technical instruction already described. In future years it is the intention practically to reserve the whole of the technical instruction grants for the central municipal schools. These schools will include, besides the School of Art, technological classes in subjects which it is believed will be of direct value to existing and future industries and manufactures in Cork.

The School of Art has in the past done excellent work; but the Science classes, on the whole, have been starved. In the direction of Science and Technological instruction great changes may be expected. On the industrial side of the school there are classes for Lace-making and Crochet. These classes are largely attended, and most of the designs are supplied by students of the Design Class in the School of Art. A good feature of the School of Art is the system of scholarships in connection therewith. In 1892 ten free studentships were offered to pupils of National Schools in the city, admitting to evening classes. A preliminary test examination in freehand enabled the Committee to select the best candidates. In respect of scholarships the Exhibition of 1883 had important influence on the work of the School. It was decided that a surplus remaining from the fund raised for the Exhibition should be devoted to the endowment of two scholarships of £50 each, to enable successful candidates to receive a year's training at the Royal College of Art, South Kensington. At first these scholarships were limited to young men (industrial students or artisans), but in 1889-90 one of the scholarships was offered to women students. These scholarships have been of great benefit to many of the successful candidates; several have won scholarships in the College of Art, South Kensington, and have obtained appointments under the London School Board.

The Technical Instruction Committee of Limerick County Borough have moved with a greater deliberation, but a comprehensive scheme is now under consideration.

At Londonderry the School of Art has formed the nucleus of the new scheme, which will include a large development in science and technical classes, chiefly in Naval Architecture, Engineering, Carpentry, and Joinery, and the erection of a Municipal Technical School suitable to the requirements of the city. The site for this school has been obtained, and plans are being discussed.

The scheme for Waterford City involves the erection of a central Municipal Technical School. Meanwhile four Secondary Schools have received grants for apparatus and equipment. The School of Art is to be used as the nucleus of the science and art and technical evening schools.

The Other Urban Centres.

After the six county boroughs come in importance the large urban centres. With a view to enabling the Technical Instruction Committees to obtain information on the actual working of technical instruction which would be of use to them in the preparation of their own schemes, the Department suggested the sending of deputations to visit certain centres in England and Scotland where schemes of technical instruction could be seen in operation. This suggestion was, in the first instance, made to the Technical Instruction Committees of the County Boroughs of Cork, Limerick, Londonderry, and Waterford. Dublin and Belfast had already, on their own initiative, sent such deputations to England and elsewhere. The County Boroughs of Limerick, Londonderry, and Waterford adopted the suggestion of the Department, and a deputation from these three cities, accompanied by the Chief Inspector of Technical Instruction of the Department, visited Birmingham, Manchester, Bolton, Longton, and Burslem. A Cork deputation was formed at a later date to visit centres in England and Scotland.

The results of these visits were very satisfactory, and it was decided to organise other visits of inspection on similar lines. In April four deputations, each accompanied by an officer of the Department, visited centres in England and Scotland. One deputation consisted of seven members of the Rathmines Technical Instruction Committee: this deputation visited schools —chiefly Schools of Commerce—in Liverpool, Leeds, Bradford, and London. The second deputation consisted of fourteen members of Technical Instruction Committees from Pembroke, Kingstown and Blackrock: technical schools in Longton, Leek, Radcliffe and Heywood were visited. The third deputation consisted of nine members of Technical Instruction Committees from Ballymena, Coleraine, and Lurgan: the members of this deputation visited technical schools in Glasgow, Leith, Paisley, and Dunfermline. The fourth deputation, consisting of seven members of Technical Instruction Committees from Dundalk and Wexford, visited technical schools in Bath, Swindon, Worcester, and Birmingham.

As to the actual schemes of technical instruction formulated by the urban centres and considered by the Department, those of Wexford, Armagh, Ballina, Ballymena, Blackrock, Coleraine, Kingstown, Lurgan, Rathmines, Tipperary (including the rural district) have been approved. In each case there were several conferences with the officers of the Department, resulting in a discussion of their reports on the local circumstances and needs, and a decision as to the types of schools, and the appointment of head instructors and organisers.

As the Wexford scheme was the first of those approved of the outlines may be given here as illustrating the method followed of adapting schemes of technical instruction where local industries exist to the needs of these industries.

The central idea of the scheme is a small School of Engineering. Wexford has a population of about 12,000 inhabitants, and is the centre of much industrial activity. The manufacture of agricultural implements, building, and repairing-engineering, and coach-building, are the most important industries. The well-known works of Messrs. Pierce & Co., William Doyle, Thompson Brothers, R. & R. Allen, and those of the Wexford Engineering Company (which are about to be transferred to the town of Wexford), and Cooper's Cement Works at Drinagh, employ about 1,000 hands, and of these a good proportion are men whose work demands skill and experience with engineering tools. It is proposed to build, at a cost of £2,000, a new school, which, it is hoped, may be open in September or October, 1902. The subjects to be taught in the school would include Workshop Mathematics, Drawing (not only of a special character for artisans, but such as would be of use to ordinary students), Practical Geometry, Physics, Manual Instruction, Mechanical Engineering, Coach-building, and, from time to time, as occasion may desire, other subjects of a more important character. Instruction in technical subjects was commenced temporarily in the Town Hall in September, 1901.

The scheme for Athlone is an interesting illustration of how local contributions from other sources than the rates can be utilised in this work. In that town a local manufacturer of public spirit, has supplemented the money in aid of the scheme from the Urban District Council rate by subscribing a capital sum of £500, and an annual sum of £150, and the Department have arranged to include this handsome contribution in the finance of the scheme. The scheme includes provision in the existing schools for day and evening instruction in Science, Drawing, and manual work, and for the establishment of a technical school, in connection with the school of the Marist Fathers, in which Wood-carving, Furniture-making, Basket-making, and other industrial subjects can be taught. It also includes provision for instruction in Cookery, Laundry-work, Domestic Economy, Needlework, &c., in the girls' schools.

The majority of the smaller Irish towns, whose character is more rural than industrial, will, in all probability, come within county schemes, and of schemes of technical instruction which include such towns typical examples will be found under the next heading.

The Counties.

The counties have been active in their requests for the assistance of officers of the Department in the formulation of schemes. The position of the counties in reference to schemes of Technical Instruction, and to Agricultural schemes under the Department, involves a complication which it is not always easy for the representatives of rural districts to appreciate. Schemes for counties are chiefly aided from that portion of the Department's funds which is administered with the concurrence of the Agricultural Board, the proportion of the Department's funds coming through the Board of Technical Instruction generally being considerably smaller in rural districts. Rural councillors are sometimes apt, in consequence, to feel a reluctance in approving of a County Council rate being applied in aid of technical instruction schemes in the urban districts of the county. It is necessary to make it very clear that the funds of the Department, no matter which channel they come through, are meant to be regarded as a whole, and that the schemes under the Act to which a county rate applies include schemes for the benefit of rural districts for which moneys come that are not available for urban schemes. Moreover, as pointed out in Part I. of the Report, the country towns in Ireland are intimately bound up in many ways with rural life, and are natural centres for many forms of technical instruction of which pupils from rural districts can avail themselves. In most of these towns a large proportion of pupils from surrounding rural districts attend the schools; by a system of bursaries or scholarships pupils from more distant rural districts can be helped to avail themselves of the teaching of these schools; and a system of technical instruction by means of itinerant teachers visiting rural districts or rural schools, usually can best be directed from such centres. The Department, accordingly, in considering schemes of technical instruction for counties, is obliged to arrange for the closest co-ordination between the work of its Agricultural Branch and that of its Technical Instruction Branch; and the Department's scheme for a county as a whole must be looked for under both heads. The schemes for which the funds of the Board of Technical Instruction are available in counties have been conceived with this idea carefully in mind. It will be understood that the task of organising Technical Instruction in the counties is one which will naturally take a longer time to complete than in urban centres. Considerable progress has, nevertheless, been made.

Twenty-four counties have had schemes under consideration, and many of these are well advanced. About half of them are so far forward that a considerable portion of the scheme will be in operation during the school session 1901-2. Five counties, viz., Carlow, Fermanagh, Galway, Meath, and Waterford, have had schemes fully approved; and those for Clare, Kerry, Louth, Queen's County, Sligo, and Tipperary North, are almost complete.

An instance of a county scheme of Technical Instruction (as distinct from Agriculture) which deals with some of the small provincial towns is that for North Tipperary. This scheme includes the towns of Nenagh, Thurles, and Roscrea. An economic system of co-ordination has been arranged with the County Council Committee, of which, for example, an instructress in Cookery, Laundry-work, and Home-sewing can give lessons in these centres, and other centres of the county, such as Templemore, Borrisoleigh, Borrisokane. (Under the Agricultural scheme for such a county these lessons would be supplemented by itinerant instruction in Dairying, Poultry-keeping, &c.) Similarly, co-ordination can be effected in the teaching of Drawing in the different centres. The Christian Brothers' Schools at Nenagh and Thurles are introducing the teaching of Practical Science, Drawing, and Manual Instruction, and of Technical Subjects suited to the local trades. The Lace class at the Presentation Convent in Thurles is being improved by aid for additional equipment and teaching, and a Day Technical School for domestic servants is being organised at the Mercy Convent, Nenagh.

To meet the case of districts of this type the Department have arranged, with the concurrence of the Board of Technical Instructions, a provisional system of Capitation Grants for the administration of their Technical Instruction monies, to run concurrently with, and on similar lines to, the Capitation Grant, under the Parliamentary Vote for Science and Art. The conditions on which these grants may be earned are as follow:—

Technical Schools for Boys.

There will be paid for Evening Instruction to Boys, for every pupil who, being engaged in industrial or commercial work in the day time, is certified by the Department's Inspectors to have received at least twenty lessons of an hour and a half each, or thirty lessons of one hour each, in any of the following, and such other subjects as may from time to time be recognised by the Department:—

(a.) *Commercial Subjects.*—Shorthand, Book-keeping, Typewriting, Commercial Arithmetic, Commercial Geography.

(b.) *Science and Art Subjects.*—Elementary Science (as in Department's New Programme for Day Secondary Schools), Building Construction and Drawing (Directory Programme), Machine Construction and Drawing (Directory Programme) Drawing and Wood-carving, Drawing and Modelling, Design, Workshop Mathematics (including Technical Arithmetic and the use of Mathematical Instruments).

(c.) *Industrial Subjects.*—Carpentry and Joinery, Plumbing, Cabinet-making, Coach-building, Paper Manufacture, Milling, Book-binding, Pottery and Porcelain, Boot and Shoe Manufacture, Watch and Clock-making, Typography, Bread-making and Confectionery, Ship Joinery (City and Guilds of London Institute Programme in each case), and such other subjects as may from time to time be recognised by the Department as suitable for a particular locality.

Grants.—For subjects in (a.) division, grants will be paid at the rate of 7*s.* 6*d.* per pupil per subject per session; for (b.) subjects at the rate of 15*s.* per pupil per subject per session; for (c.) subjects at the rate of 30*s.* per pupil per subject per session.

A session to consist of not less than twenty weeks (not necessarily continuous) in each of which at least one lesson must be given; there cannot be two sessions within the year 1st August, 1901, to 31st July, 1902. Provided—

(*a*.) That the rooms are satisfactorily equipped, and that the teachers are qualified.

(*b*.) That not more than two subjects be paid on in the case of any one student.

(*c*.) That in each subject of (a.) and (b.) theoretical instruction be accompanied by an approved amount of practical work.

Grants will be paid at two-thirds of the above rates on students who, though not engaged in industrial or commercial work in the day time, are over twelve years of age, and have passed the second stage of the Fifth Class, provided—

(1.) That the Department's Inspectors are satisfied that the subjects of instruction would be beneficial in such cases.

(2.) That the class contains a fair proportion of industrial or commercial students.

(3.) The question of paying grants for subjects which may also be paid on under the Evening Continuation School regulations of the National Board be reserved.

(4.) Should the sum now allocated not enable the Committee to pay off all claims in full, the payment will be made proportionately.

Technical Schools for Girls.

For every girl not on the National or Industrial School Roll who is certified by the Department's Inspectors to have made not less than eighty attendances of three hours each at classes in Lace, Crochet, Needlework, Machine Knitting, Shirt-making, Cap-making, Woollen Jersey-making, Drawn Thread Work, and such other Commercial, Domestic, and Industrial subjects as may from time to time be approved of by the Department, provided she, as part of the school work, has received at least thirty lessons in Cookery (half being demonstration lessons of one hour each, the other half practice lessons of an hour and a half each), a grant of £2 per head per session will be paid, provided—

(*a*.) The equipment and instruction are satisfactory.
(*b*.) The teachers are qualified.
(*c*.) The Sales and Wages Book and Attendance Registers are satisfactorily kept.

In dealing with instruction in the above subjects the Department's Inspectors will be specially directed to report how far the work is instruction, and how far the practice of an occupation or industry.

(c.)—SCIENCE AND ART GRANTS.

Besides its special endowment for technical instruction, to which the foregoing relates, and the grant under the Technical Instruction Act of 1889 in Ireland, the Department now administers, as from the 1st of April of this year, the grant for Science and Art in Ireland hitherto administered by the Board of Education, South Kensington. This is a Parliamentary grant in aid of Science and Art instruction in day schools and in evening schools, and in some institutions (for example, Schools of Art), in which instruction is given partly in the day time and partly in the evening. It is an educational endowment which is capable of being utilised to a much greater extent than it has hitherto been in Ireland, both for the purposes of a liberal education and, indirectly, for those of a system of technical instruction. Ireland, in 1900, only earned £3,840 from this grant; while Scotland, in 1899 (the latest year for which figures are available), earned from it £38,800.

Instruction in Science and Art in Ireland has of late years fallen to a very low ebb. Ten years ago, in 1891, the Science and Art grants in Ireland amounted to £8,481, a sum which, though small, was twice the figure to which the grants have since declined. In 1891 the number of boys presented for Science in the Intermediate Examinations was 2,885; the number in 1899 was 673, less than one-fourth. In 1891 the total number of boys presented at these examinations was 3,856, whilst in 1899 it was 5,726.

Such was the situation of Science and Art instruction in this country when the Department took up its work as administrator of the Science and Art grant. Happily, it was a situation the mischiefs of which had already begun to be recognised by educational authorities in Ireland. For the Primary Schools under their control the National Commissioners of Education, following the recommendations of the Manual Instruction Commission, were engaged in introducing a new Programme, in which elementary Science and Manual Instruction are leading features. For Secondary Schools the Intermediate Education Commission had reported strongly in favour of Natural Science teaching; and an Act of Parliament had just been passed to enable an enlarged Intermediate Education Board to carry out the summary of conclusions of the Report. These facts, together with the statutory means for educational co-ordination provided in the Act which created this Department, rendered the occasion propitious for reform.

The New Programme.

The Department accordingly proceeded to revise the system on which the Science and Art grant had previously been administered in Ireland, and to draw up a new Programme of instruction in the subjects for which the grant might be earned in Secondary Day Schools (the revision of the system as regards Evening Schools being left over for the time being). This Programme was conceived with the two-fold object of rendering it less difficult for Irish schools to avail themselves of the Science and Art grant, and of helping them at the same time to introduce into their curriculum an element of great value both to general education and, subsequently, to specialised practical instruction. As stated earlier in the Report, the Department approach this subject of the administration of the Science and Art grant primarily from the point of view of general education. They desire it to be understood that they regard a liberal introduction to general culture as the essential foundation for all sound forms of systematic specialised instruction whatsoever, and that, in their opinion, Science and Art instruction cannot be a substitute for humane letters in such a general course. It can, however, they believe, be made a powerful ally. Apart from its utility in teaching facts, Science instruction, if it be given through the laboratory (where the teacher does not dogmatise but stimulates and directs inquiry), rather than through the lecture-room, and if it be accompanied by a certain amount of instruction in drawing and manual work, becomes a valuable mode of intellectual training. It gives full opportunities for creating interest on the part of the pupil, it draws out his powers of observation, puts him in the attitude of a seeker after knowledge, and gives him accurate and orderly habits of thought. Having done its part, side by side with literary instruction, in a course of general education, Science and Art instruction will have prepared the pupils who have received it, when the age for specialisation comes, for those practical and technical courses towards which it is so important in Ireland to direct much of the teaching power of the country, and which it is the particular duty of this Department to organise. The new Programme of Experimental Science, Drawing, Manual Instruction, and Domestic Economy, which the Department prepared for the administration of the Science and Art grant, was conceived with a view to serving these purposes in the Secondary Day Schools.

It was essential that in this matter there should be no overlapping of efforts nor divergence of aims on the part of the Department and the Intermediate Education Board. Accordingly the Department submitted their programme to the Intermediate Education Board, and the Board in its turn appointed a sub-committee to confer with the officers of the Department on the subject. As the result of these negotiations the Intermediate Board resolved to adopt the programme of the Department, and made it a part of their curriculum.

The following are the special Regulations of the Board as to Experimental Science and Drawing, Drawing, Domestic Economy, and Botany :—

"Drawing shall be allowed as a separate subject in all Grades.

"The courses in Experimental Science and Drawing, and in

"Drawing as a separate subject, shall be those adopted by the "Department of Agriculture and Technical Instruction for Ire "land.

"Experimental Science cannot be taken without Drawing.

"The examinations in the subject of Experimental Science and "Drawing, and in Drawing as a separate subject, will be held by "the Department of Agriculture and Technical Instruction for "Ireland. The Board will not hold any examinations in these "subjects.

"Every candidate who will be certified by the Inspector of "the Department of Agriculture and Technical Instruction for "Ireland to have worked satisfactorily through a practical course "on the lines set out in the programme for Experimental Science "and Drawing of the Department, and to have been present at "the final inspection, shall be deemed to have passed the exam- "ination in that subject.

"Candidates for Honours, Prizes, and Exhibitions who take "up the subject of Experimental Science and Drawing will be "examined individually by an Inspector of the Department, and "the marks assigned by the Department shall be treated as if the "examination in these subjects had been held by the Board.

"In the year 1902 the course in Experimental Science and "Drawing for all Grades shall be the First Year's Course, as set "out in the Programme of the Department. In the year 1903, "the course for the Preparatory Grade shall be the First Year's "Course of the Department, and for the other Grades the Second "Year's Course of the Department.

"In the years, 1902 and 1903 the examination and inspection "of the higher Grades will be more searching in consideration of "the students having reached a more advanced stage.

"The subjects of Domestic Economy and Botany will be ulti- "mately included in the Programme; but in the year 1902, "pending the completion of arrangements with the Department of "Agriculture and Technical Instruction, and the establishment of "a system of inspection, the Board will not examine in these sub- "jects, except as provided in Rule 53."

By this arrangement between the Intermediate Board and the Department a strong reinforcement of the new reform has been secured, and a close co-operation, which must prove of the greatest value to the interests of educational progress, has been established between the two authorities.

Aid to the Schools.

This arrangement has one great advantage for the schools. It provides that the rules and regulations governing the administration and distribution of Science and Art grants, and also the inspection of all science and art instruction in Secondary Schools in Ireland, are, for the time being, entirely under the care of one authority. The Department took the earliest steps to facilitate the introduction of the Programme into the schools. It was clear that as the natural result of the previously existing situation of science and art instruction the schools were ill prepared for the change proposed. They suffered from three serious drawbacks : —

(1) They were without definite aims in such Science and Art instruction as they had been giving;

(2) They had, as a rule, neither laboratories nor specialised art rooms;

(3) There was, on the whole, a dearth of science teachers with experience of experimental work.

The Department endeavoured to meet the first of these drawbacks by publishing with their Programme a pamphlet setting forth the aims of the instruction, and suggested syllabuses of the first two years' work ; and at the same time, by taking the heads of schools into direct conference on the subject. This latter was a new and, it is believed, a useful, step in the action of an educational Department of the State in these countries towards the schools with which its work is concerned. A conference of some thirty representatives of the more important day schools was arranged at the offices of the Department. The members of the Sub-Committee of the Intermediate Education Board and the chief officers of the Department attended. A day or two before the conference the pamphlet referred to was in the hands of the members; at the conference, lasting some three hours, the contents were submitted to criticism; and to ease down the difficulties of introducing the system several important details were altered.

With regard to apparatus and equipment, the Department propose to help the schools on the one hand by means of financial grants, and on the other with expert advice. Having regard to the fact that no system of technical instruction can be efficient for a country until the general schools of the country have incorporated in their regular curriculum a sound system of teaching in science and drawing, the Department felt that part of its first year's endowment for technical instruction which could not be expended upon schemes before 1st April, 1901, might be applied in aiding the Secondary Schools to acquire the apparatus and equipment necessary for the new Programme. They accordingly, with the concurrence of the Board of Technical Instruction, made such aid a feature of schemes in most localities throughout the country. They had, moreover, a small allowance for apparatus and equipment under the Science and Art grant, which was similarly applied. At the same time the Department had prepared dimension drawings of typical laboratories and issued them to the heads of schools asking for them. Suggestions with regard to the equipment, and a list of indispensable apparatus for the first two years' work in Science, accompanied by a statement of the probable cost, were issued to the Managers of all Secondary Schools in Ireland. Further, the schools were invited to send dimensioned drawings of the rooms proposed to be converted into laboratories. At the moment of writing one hundred cases of provision of laboratories have been dealt with. A suggested arrangement (with accompanying notes, hints, and advice with regard to equipment and necessary apparatus) has been supplied to the school. Where necessary, an officer of the Technical Instruction Branch of the Department visited the school and gave the Managers the benefit of his experience on the spot. The arrangements finally decided on have been approved. The number of laboratories to be dealt with in this way is daily increasing, and shows that the work of Science and Art instruction in Day Secondary Schools is largely to be taken up in the coming session.

Special Courses for Teachers.

As to the provision of teachers, it was decided to meet this difficulty by holding short courses of instruction during the months of July and August, with a view to enabling teachers who had already received a training in Science to obtain the necessary knowledge and skill to give the first year's instruction in the new Programme of Introductory Physics or Drawing. It should be understood that these short courses were not to be given to teachers in a subject with which they had not been previously conversant. They were, rather, courses to train teachers in a special application of a subject which they were already qualified to teach. It was found, on communicating with the schools, that there were a very considerable number of teachers who had already had sufficient training to enable them to benefit by the special course. Further courses will be given to the same, and to other teachers, to prepare them for giving the second and further years' instruction in the new Programme.

Courses in Experimental Science (Introductory Physics) were held in Dublin, Belfast, and Cork. A course of twenty days' instruction, from 10 a.m. to 4 p.m. each day (Saturdays, 10 a.m. to 1 p.m.), was arranged for at the Royal College of Science, Dublin, in charge of Professor Barrett and seven assistants. For this course seventy teachers were accepted. A course for forty teachers, also in Introductory Physics, was arranged for at Queen's College, Belfast, in charge of Professor Morton and three assistants; and a similar course, also for forty teachers, was arranged for at the Christian Brothers' School, Cork. The Professor in charge at this centre was Mr. John Buchanan, D.SC., of Gordon's College, Aberdeen. He was assisted by three demonstrators. These Courses have been most successful.

With a view to placing similar opportunities for instruction within the reach of the nuns of the various teaching Orders, courses were organised at four centres, and given successfully.

Practical and written examinations were held at the close of each course; the teachers' work during the course and the results of the practical examinations being determined by the Professor in charge, the written papers being valued by examiners unconnected with any of the classes.

A course of four weeks' instruction for teachers of Drawing was organised at the Metropolitan School of Art, Dublin. The course was in charge of Mr. Brenan, the headmaster, assisted by four members of his regular staff. Eighty teachers attended this course.

In all these courses no less than 293 teachers, representing 196 schools have been in attendance; and it has been gratifying to find that a large number of teachers were willing to sacrifice their holidays in the work of preparation for the coming session. They attended the courses with admirable punctuality and regularity; and in work, beyond the regular hours of the course, displayed a keenness and enthusiasm which were remarkable, and augur well for the future of Science and Art instruction. As the results of this form of instruction are to be tested, and grants paid mainly on inspection, a great responsibility is thrown on the teachers and on the inspectors of the Department. The teachers have shown their willingness to share the burden: it is hoped that the steps already taken by the Department in the direction of establishing the new scheme by training teachers and offering advice as to equipment of laboratories, &c., may be continued and supplemented during the coming session through the Department's inspectorate, whose duties will be largely of a constructive character.

Evening Schools.

The need for revising the system of grants for Science and Art instruction to schools other than day schools was not immediately urgent, and it was, therefore, decided to continue substantially the same regulations as had hitherto applied (those of the Science and Art Directory of the Board of Education, South Kensington) for the session 1901-2. It is hoped by another session that the officers of the Department will have had sufficient experience of the needs and possibilities of evening instruction in Ireland to enable them to advise the Department in regard to a revised system.

The Work of the Session 1900–1901,

The academic year just closing was the first in which grants were to be paid on the results of inspection alone. The changes in the inspectorate during the year and the exceptional pressure of work resulted in the inspection being far less thorough than was intended.

Science and Art classes in connection with the Board of

Education (South Kensington), as shown in the following statement, were in existence :—

Science and Art Schools and Classes in Ireland.

Total number,	127
Number giving evening instruction,	35
„ „ day instruction,	92
„ „ Art instruction only,	33
"Schools of Science,"	2

The number of large institutions is small. In some of these very good work is done; in others the work, as a whole, is poor.

In Day Secondary Schools in connection with the Board of Education (South Kensington) practical instruction in Chemistry was given in only four cases; in Physics in two cases only. In no other schools was practical instruction given. Of the laboratories in which this work was carried out, two only could be described as satisfactory in regard to size and equipment. The usual subjects taught in these day schools were Mathematics, Practical Plane and Solid Geometry, and Mechanics (Solids and Fluids). Physiography, Electricity, and Magnetism and Chemistry were next in order of frequency. Mathematics, in general, was efficiently taught, the Euclid being, as a rule, very sound.

Instruction in Practical Plane and Solid Geometry suffered much from want of illustrative models; and, as a rule, the Solid Geometry was left untouched. In most schools the instruction in Mechanics and Chemistry was mainly in preparation for the written examination of the Intermediate Education Board. In some few cases, the schools possessed no apparatus at all; in most, far too little use was made of that which they did possess. In a very few cases only were note-books systematically and regularly kept.

Much earnest and painstaking work was done in the Art classes throughout the session. Improvements in method, however, are possible, and it is felt that the development of these classes will receive fresh impetus under the Department's new Programme.

Technical Schools were allowed, during the past session, an equivalent grant under Sections LXXXVI. *a.* and LXXXVI. *b.* of the Directory of the Board of Education, South Kensington. Much of the work assisted in this way was distinctly good. In a few cases the work requires reorganisation.

(*d.*)—RURAL INDUSTRIES.

Lace, Crochet, and Needlework.

Out of the sum voted by the Agricultural Board for rural industries, to be administered with the concurrence of the Board of Technical Instruction, twenty-one Home Industries societies and classes were assisted. The industries promoted by these societies are mostly those which can be carried on by women of the rural classes, such as lace, crochet, embroidery, needlework; and the aid consisted chiefly of a grant to meet the salary of the teacher giving the necessary technical instruction. These societies and classes are distributed over eleven different counties. The approximate number of workers involved is 1,011. The workers, who are chiefly the daughters of small farmers and labourers, help on the farm during the busy season of the year, and resume the industry when pressure of work is over. Few devote all their time to the industry; it is rather the occupation of their leisure hours, and is thus distinctly supplementary to agriculture.

The lace and crochet industry is capable of much development in Ireland. Crochet, moreover, can be produced under difficult conditions, and is adapted to all classes of workers. The finer varieties of crochet require as much care and as delicate handling as any other sort of lace, but ordinary crochet in white thread can be washed, steeped, even boiled and bleached before it is sent to market. This fact alone enables the crochet industry to be carried on in many a poor cabin where lace-making would be impossible. But to establish these industries on a permanent basis a high standard of quality must be maintained To this end a knowledge of drawing is of the greatest importance to all workers, in enabling them to reproduce patterns with truth, accuracy, and artistic feeling. Girls who can draw, and who are good at plain sewing, are able to produce saleable work in a much shorter time than others. For crochet a knowledge of drawing is even more important than for lace, for the crochet-worker has often to form her own pattern, and join her details to fit into certain shapes, as best she may, without plan or guidance. Such work, to be done in the best manner, calls for some knowledge of design, as well as of drawing. To meet these requirements the Department have sent to lace and crochet classes, whenever possible, teachers who possessed a knowledge of drawing and design, and they have under consideration special courses of instruction in design to be given at the Metropolitan School of Art to lace and crochet teachers. At the same time the introduction of the Department's new Programme of Drawing into the schools will have an important influence upon the position of these industries, as well as on the prospects of other artistic industries in Ireland.

(*e*.)—PIONEER LECTURES.*

Technical Instruction—Pioneer Lectures.*

During the winter a scheme of "Pioneer Lectures" was organised, in order, as stated in a prospectus sent to every local authority, "to illustrate the need and use of scientific instruction in agriculture and industries, and to explain to local authorities and the public generally, and especially to the working classes, the manner in which the Department can aid in supplying this need." The syllabus of Pioneer Lectures was divided into two sections, under the headings, respectively, of Agriculture (including Veterinary Science) and Technical Instruction, the former being intended for rural audiences and the latter for townspeople. In both cases the kind of audience which the Department had mainly in view was one composed of farmers and artisans, and the subjects were, therefore, treated in a strictly practical manner, and, where suitable, were accompanied by lantern illustrations. The Department supplied the lectures free to any County Council or other local authorities applying for them, on the latter undertaking to provide a suitable hall, and to meet all purely local expenses, including advertising. The lectures under the Agricultural Syllabus have been referred to in the preceding part of the Report.*

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* See also p. 37.

Up to the 31st March a considerable number of lectures from the Technical Instruction Syllabus had been delivered in large and small towns throughout all parts of Ireland on the subject of the Textile Industries, the Building Trades, the Machine Trade, the Electric Current, Art in application to Industry, Science in the Household, and the general principles of Technical Instruction as applied to Industry. The lecturers were—Professor Beaumont, of the Yorkshire College, Leeds (the Textile Industries), the Rev. P. J. Dowling, C.M., Professor James Lyon, M.A., Royal College of Science, and Mr. William Gray, M.R.I.A. (Technical Instruction), Mr. William Tatlow, M.A. (the Electric Current), Mr. R. C. Orpen, C.E. (the Building Trades), Miss O'Conor-Eccles (Science in the Household), and Mr. T. W. Rolleston, M.R.I.A. (Art and Industry). Professor Lyon also lectured on the Machine Trades. Among the places visited by lecturers, on invitation of the local authorities, were—Armagh, Athlone, Ballymena, Banbridge, Belfast, Clonakilty, Clonmel, Coleraine, Cork, Drogheda, Dungannon, Enniscorthy, Galway, Kilkenny, Killarney, Limerick, Nenagh, Skibbereen, Sligo, Thurles, Tralee, Waterford, Youghal; the lecturing centres being distributed very evenly throughout the country. The lectures were in general largely attended, and excellently reported in the provincial Press, which thus helped materially in enabling the objects of the scheme to be fulfilled. In almost every case the Committee in charge of the local arrangements were cordial in their co-operation with the Department, and carried out the duties which devolved upon them ably and successfully. From Press reports and other information received by the Department, it is clear that the lectures have been of much service in bringing the value and meaning of technical instruction before the working classes, especially in the smaller centres of population, and they have, in many cases, been followed by requests for guidance in the drawing up of schemes of technical instruction.

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* See p. 37.

3. FISHERIES.

The powers and duties of the Inspectors of Irish Fisheries having been transferred to the Department under Section 2 of the Act, the Department proceeded to constitute a Fisheries Branch, to whose special care these duties would be entrusted, and through whom further action in the interests of the sea and inland fisheries might be undertaken by the Department. A detailed report of the operation of the Department under this head during the past year, viz., the "Report of the Sea and Inland Fisheries of Ireland" [*Cd.* 718], 1901, has already been laid before Parliament. It will not, therefore, be necessary here to do more than indicate the manner in which the administration with respect to the fisheries is affected by the new conditions.

Organisation of Fisheries Branch.

The Inspectors of Irish Fisheries, who have now become officers of the Department, had not at their disposal funds or powers sufficient to permit of their taking effective positive action for the development of the fisheries as a public industry, for the protection of the fishing grounds against illegal interference, or for the prosecution of the scientific research which is necessary to a proper comprehension of the needs of the industry and the best modes of defending and developing it. They frequently, while exercising with much efficiency and energy the valuable powers entrusted to them, pointed out these limitations. It was only indirectly, under the powers of the Congested Districts Board, to which body one of the Inspectors was attached as a temporary member—a function which he still continues to fulfil with the full assent of the Department—that it was possible, over a certain extent of the coast-line, to pursue action in some of these directions in connection with the sea fisheries.

The Department have now powers and funds to act in all of these directions. An annual sum of £10,000 is placed under their control by Section 16 (1) (*d*) of the Act specially for the purpose of sea fisheries; and, in addition to this, it is open to them, with the concurrence of the Agricultural Board, to apply such sums as they may think fit, from the Surplus administered through that Board, to the purposes of sea and inland fisheries. The definition of these purposes is sufficiently wide to permit of considerable variety of action.

In constituting the Fisheries Branch with a view to the proposed new work the Department reinforced the staff taken over with the Inspectors of Fisheries, by the appointment of a Scientific Adviser, two assistant naturalists, and a technical assistant; and, recently, when one of the existing Inspectors retired, an Inspector was appointed in his place with special qualifications for dealing with the needs and developments of the industry on its commercial side. The senior of the existing Inspectors, Mr. W. Spotswood Green, was made Chief Inspector and head of the Branch.

In order to have the advice, not only of their own expert officers, but of those who are directly in touch with or representative of the fishing industry throughout the country, the Department further appointed a Special Committee on Fisheries, constituted on similar lines to the Special Advisory Committees on Live Stock, Flax, &c., which are associated with the work of the Agricultural Branch.

The Suppression of Illegal Steam Trawling.

One of the purposes for which the Department found that action was most urgently required, was the protection of the fishing grounds of the coast from the illegal encroachments of steam trawlers. The Admiralty, for some years past, had been obliged by circumstances to diminish the amount of assistance which they had previously been in the habit of giving to the work of marine superintendence on the Irish fishing grounds. It might, in fact, be said that during those years the Irish fishing grounds were practically unprotected. The consequence was a great and most injurious increase of steam trawling within the forbidden limits.

The Department, accordingly, as soon as was practicable, took steps to cope with this situation. They resolved to acquire, entirely for their own service, a steam cruiser, which would be available for the protection of the fishing grounds, and which would likewise be available for the work of scientific investigation that they also intended to promote. After careful consideration they purchased the cruiser "Helga," a twin-screw steamer of 375 tons, a boat of excellent sea-going qualities, capable of maintaining a high rate of speed, and with a low freeboard, which renders her very suitable for fishing operations. For her duties in patrolling the protected areas the Department caused the "Helga" to be specially fitted; and for the purposes of scientific investigation of the fishing grounds they had her completely equipped as a trawler. She carries a number of trawls of different patterns, the largest having a beam of 41 feet, and is provided with dredges, lines, and tow-nets, deep-sea sounding apparatus, and all necessary instruments for physical and microscopical observation. The "Helga" was ready for sea in October and manned by an efficient crew, whose officers were furnished with warrants empowering them to act under the Fishery Laws against illegal trawling.

In addition to having entirely at their service the "Helga," the Department came to an arrangement with the Congested

Districts Board by which the steamship "Granuaile," belonging to the Board, was, so far as her other duties permitted, placed, by the courtesy of the Board, at the disposal of the Department for the purpose of assisting in the protection of fisheries. The Department have furnished warrants giving the necessary powers to the officers of this ship.

H.M. Coast Guards in several instances rendered valuable assistance to the Department by telegraphing information as to illegal trawling which came under observation off their stations.

The "Helga" began her active patrolling operations in November, and, between that date and the close of the spring fishing season, she succeeded in capturing twenty steam trawlers who were fishing within the protected areas. These captures took place on the eastern, southern, and western coasts. In one of these cases the trawl net was seized, forfeited, and sold; in sixteen cases the skippers were prosecuted, and fines and costs were imposed; in three cases it was considered enough to warn the owners. The efforts of the Department in this direction have already resulted in a marked diminution of the number of complaints of trawling within the limits received from Irish fishermen; and the Department are confident that, with the aid of the Act which has just passed through Parliament with a view to giving them more effective powers for punishing those convicted of illegal trawling they will be able to deal sufficiently with this illegitimate menace to the Irish fishing industry.

Markets for Irish Cured Fish.

The importance of giving attention to the commercial side of the fisheries was brought home to the Department during the year in connection with the autumn mackerel fishery. Practically, the sole market for Irish-cured mackerel is that of America, and this market was reported to be in peril last year, so far as Irish mackerel was concerned, owing to the revival which had taken place in the native mackerel fishery on the American coast. This revival was so confidently anticipated by the trade that merchants on this side of the Atlantic made few preparations for curing. The failure of the existing American market, should no other markets be available, would mean severe losses to the Irish fishing population. Happily, before the season concluded, the demand in America improved, and it is hoped that it may continue. The Department, realising the importance of having other outlets for Irish-cured mackerel, took such steps as were possible last autumn to secure them. They sent a special Commissioner to England with this object; and they also made enquiries as to the possibility of opening up a market in South Africa. In connection with the latter enquiries they received valuable assistance from the Colonial Office. The most likely prospect of new markets, however, seems to be in America itself, where, as has been pointed out by the British Consul in New York, the development of direct steamer lines from British ports to cities on the great American lakes promises opportunities for further expansion of a trade which has already obtained a foothold in the large cities on the Eastern coast. With a view to being thoroughly and exactly informed as to these opportunities, both for herring and mackerel, the Department sent a special Commissioner to America this year, and he has returned with information which should prove of great value to the Irish mackerel and herring fisheries. The Report of this expert has been printed by the Department and circulated amongst those concerned in the cured fish trade. It will be found in the Appendices.

The herring fishery offers some prospect of development, and the Department have begun experiments to test the possibility of establishing a herring fishery off the coast of Londonderry and North Antrim.

Scientific Surveys and Research Work.

An important task, which the possession of the "Helga" has enabled the Department to undertake, is a survey of the principal Irish oyster grounds, preliminary to efforts which it may be practicable to make for the resuscitation of the oyster industry, once so important in Ireland.

For the work of scientific investigation in reference both to our sea and inland fisheries, the Department have now an effective staff and equipment. Allusion has already been made to the scientific uses of the "Helga." These are most important both in connection with surveys, such as that of oyster grounds, and in connection with investigations bearing on the life history of food fish, and other researches in marine biology. Besides this work the scientific staff of the Fisheries Branch have been engaged on an extensive series of observations at or in connection with the Marine Laboratory, which was established in 1898, on the west coast, on the initiative of the Royal Dublin Society, for the purpose of studying, for a period of five years, the various problems affecting the mackerel fishery and the proceedings of salmon and trout in the sea. This enquiry, to the cost of which the Treasury and the Royal Dublin Society have contributed, has been taken over by the Department, and is now being continued and extended by them with the aid of a Joint Committee of the Society and the Department. Probably the most important work in scientific investigation which the Department have in hand in this connection is that which, with the support of the Agricultural Board, they hope to carry out in connexion with the salmon fisheries. This is the investigation, involving the control for a number of years of a salmon river, which was recommended by the Viceregal Commission on Irish Inland Fisheries, and the desirability of which the Department fully realise.

The Development of Inland Fisheries.

With regard to the inland fisheries generally the Department have carefully considered the recommendations contained in the report of the Irish Inland Fisheries Commission above mentioned. Some of these recommendations involve legislation; others it is possible for the Department to carry out with its present powers. Of these latter, some had already been anticipated by the Department; others the Department approve, and are taking steps to carry out; and others appear to them, so far, of doubtful expediency.

The artificial propagation of salmon in the rivers of the country, the Department decided was an object on which public money might legitimately be spent. They accordingly, with the concurrence of the Agricultural Board, proposed, during last spawning season, a temporary expedient for increasing the output from existing hatcheries maintained by private enterprise. Subject to certain conditions of inspection and limit of amount payable, they offered the sum of £25 for every 100,000 fry turned out, in the case of each hatchery, over and above its output of the previous year. In the case of hatcheries on rivers in which the proprietors of the hatcheries appeared to hold a commanding interest, payment was offered at one-third of the usual rate. By this means, at a very small cost, 424,000 extra fry over and above their usual output were turned out by existing hatcheries during the season. This measure, however, was but in the nature of a temporary expedient. The Department have already, with the concurrence of the Agricultural Board, taken steps directed towards the establishment of new, and the extension of existing hatcheries, on a more systematic and permanent plan which involves, in principle, the recommendation of the Inland Fisheries Commission on this point, though it differs from this recommendation in certain particulars in which the Department consider their plan more suitable to the needs of the country, and more likely to lead to satisfactory results.

One of the principal recommendations of the Commission was for the promotion of a scientific investigation into the life history of salmon, and this, as indicated above, the Department have resolved, so far as may prove practicable, to adopt.

The more important of the recommendations of the Commission which require legislation are concerned with the protection of the inland fisheries. This subject, so far as the extent to which State action may legitimately be employed is concerned, is largely mixed up with the question how far the inland fisheries may be considered a public industry, beneficial to persons fishing on common law rights, or otherwise employed in connection with them, and how far they may be considered a private concern beneficial to proprietors and lessees. The Irish inland fisheries differ from those of England and Scotland in this important respect, that they are largely enjoyed by the public on common law rights, but accurate data as to the value of these rights as compared with that of private rights have hitherto not been forthcoming. Such data being necessary in determining the limits of State action in the protection of the Irish inland fisheries the Department will endeavour to obtain the information before coming to a definite conclusion on this question.

For the administration of the Fishery Laws, and for all other particulars as to the operations of the Department in connection with the sea and inland fisheries throughout the year the "Report on the Sea and Inland Fisheries of Ireland" already referred to may be consulted.

4. STATISTICS AND INTELLIGENCE.

It is nowadays recognised that a Bureau of Statistics and Intelligence performs some of the most important functions which can be exercised by a State Department in regard to agriculture, industry, commerce, and education. The growing intensity of foreign competition and the centralisation of the markets of the world render it essential that the latest and fullest information on all matters pertaining to their industry should be at the disposal of our agriculturists and manufacturers, while the publication of full and trustworthy trade statistics is of the first importance in connection with the administrative work of the Department. With the object of effectively fulfilling these purposes, the Department organised a Statistics and Intelligence Branch. The three main functions of this Banch are:—

1st. To co-ordinate and centralise the collection, preparation, and publication of the more strictly economic statistics relating to Irish agriculture, fisheries, industries, and trade heretofore divided amongst four distinct Government Departments in Ireland.

2nd. To secure the collection, preparation, and publication of a fresh set of important statistics relating to imports and exports, technical education, rural industries, and allied matters not yet undertaken by any existing Irish Department.

3rd. To serve as an Intelligence Bureau for the Department, with the duty of editing its publications, and keeping in direct touch with kindred State Departments in other countries and the Colonies, so that Irish farmers and the industrial community generally might be kept abreast of the causes and conditions of the progress and success of their competitors.

I.—Statistics.

Section 2 of the Agriculture and Technical Instruction (Ireland) Act, 1899, provides, *inter alia*, for the transfer to the Department of "the powers and duties of the Registrar-General for Ireland and the Irish Land Commission, with reference to the collection and publication of statistics relating to agriculture, and of returns of average prices of agricultural produce." The collection and publication of the banking, railway, and shipping statistics of Ireland (hitherto done in the Registrar-General's Office) have also, since the creation of the Department, been transferred to this Branch of the Department. In pursuance of these duties, the following Reports and Returns were published by the Branch in the year covered by this Report:—

Two Half-yearly Reports on Banking, Railway, and Shipping Statistics.

General Abstract of the Acreage under Crops, and the Numbers of Live Stock in Ireland in 1900.

Migratory Agricultural Labourers in 1900.

Extent and Produce of the Crops in 1900.

Detailed Annual Report on the Agricultural Statistics of 1900.

Returns of Prices of Cattle, Sheep, and Swine, and Produce sold at certain Markets and Fairs.

Annual Report, for 1900, of Prices of Cattle, Sheep, and Swine, and Agricultural Products.

Weekly, Monthly, Quarterly and Annual Returns of Exports and Imports of Animals.

It may be stated that over 20,000 of these publications were distributed by the Department. An effort was made to render these returns more generally interesting and intelligible by the insertion of charts, diagrams, and maps, illustrating special features, and it is believed that some success has attended this effort. It has been remembered, moreover, that a Department such as this must, in some degree, be guided, in its administrative action, by careful analyses of the statistics at its command, and no pains have been spared to secure accuracy and promptness of publication. At the same time, it has been borne in mind that, apart from the intrinsic difficulty of seriously altering methods of collecting and tabulating statistical returns which have been employed for a great number of years, there is the obvious danger, in adopting any such course, of breaking the continuity of a series of tables, and thus minimising their value for purposes of comparison. However, improvements will be gradually introduced as they suggest themselves. With regard to the very important question of trade—import and export—statistics for Ireland, without which no adequate idea of the economic position of the country can be formed, preparations are in progress for full classified returns. These statistics, as is well known, are now, owing to the fact that there is no Customs barrier between this country and Great Britain, bulked with those for the United Kingdom collected by the

Board of Trade. It is hoped that with the co-operation of the Port and Harbour Authorities of Ireland the Department will at a future date be in a position to give a complete statistical account of our import and export trade. In each issue of the official *Journal* of the Department, a table has been published, showing the quantities of certain kinds of agricultural produce imported direct into Ireland from the Colonies or foreign countries; but as most of our imports are shipped through Great Britain, this return, though interesting and suggestive in itself, needs to be largely supplemented to show us our economic dependence on outside sources of supply.

II.—Intelligence.

A good deal of this side of the work of the Statistics and Intelligence Branch is necessarily occupied with correspondence and inquiries, which are intended for the use of the officials of the Department, and, consequently, its actual publications represent but a part of its labours. Notwithstanding the difficulties and delay of organising a new Department, no time was lost in issuing an official *Journal*. The first number of this publication appeared in August, 1900, and two other numbers were issued within the period covered by this Report. Each issue of the *Journal* contains a series of special articles on agricultural, industrial, or educational matters, a variety of shorter notes, made up of original contributions, digests of Consular reports, foreign publications, &c., and a series of statistical tables. The *Journal* has been well received, and arrangements are now in progress to extend its usefulness. Amongst the special contributions to the first three numbers may be mentioned articles on the Flax Industry of Ireland, the Ponies of Connemara, Experiments to test the value of certain Foods in the production of Mutton, carried out at the Albert Institute, Glasnevin, in the years 1883-1899; Fishery Development in Ireland and Instruction in Sea Fishery; Tuberculosis in Cattle; Live Stock Insurance; Sugar-beet Cultivation, Charlock Spraying, &c., &c.

The dissemination of knowledge amongst farmers and others by means of leaflets and bulletins was also undertaken soon after the organisation of the Department, and fifteen leaflets have been issued, giving practical instruction on the following subjects:—The Warble Fly, Enteric Disease in Calves, The Potato Disease, Workmen's Compensation Act, 1900, Separated Milk as Food for Calves, Charlock Spraying, Fluke in Sheep, Timothy Meadows, The Turnip Fly, Wireworms, White Scour in Calves, Diseases of Poultry, Contagious Abortion in Cattle, Prevention of Potato Blight, and Fertilisers and Feeding Stuffs Act, 1893.

Over 400,000 of these leaflets were issued. The mailing list of the Department is growing daily, and contains at present upwards of 3,000 individual names. To many of these large supplies of each leaflet are sent for distribution. The mere despatch of these publications involves an immense deal of labour on the staff of the Branch. Arrangements are now being perfected by which a quarter of a million copies of each important leaflet will be distributed within a week or two of its publication. In this connection the Department must acknowledge the valuable co-operation of the Press of Ireland in bringing home to those whom they concern the lessons of the Department's publications.

The preliminary work of preparing "Ireland: Industrial and Agricultural" being the Official "Handbook for the Irish Pavilion at the Glasgow International Exhibition" fell within the year under review. It is gratifying to find that this work has been, on the whole, most favourably received. Practical evidence of this is forthcoming in the fact that nearly 2,000 copies have been sold, through His Majesty's Stationery Office. This "Handbook" brings together a great deal of information on the economic resources of Ireland that will prove of service to the Department, while it is hoped that it will serve as a reference book with a continuing sale, long after the Glasgow Exhibition has closed. To this Branch, too, fell the work of organising the nucleus of a Departmental Reference Library, of home and foreign publications bearing on agriculture, industries, education, and allied interests, blue books, and official and other reports.

5. VETERINARY.

Prior to the 1st of April, 1900, the Veterinary Department of the Privy Council Office was charged with the duty of the central administration of the Acts for the prevention of the spread of contagious diseases in animals, the local execution of these Acts being entrusted to the County and County Borough Councils, as the Local Authorities, and to the police. This duty, together with the staff engaged in connection with it, has been transferred to the Department, and has been assigned to the special care of a Veterinary Branch.

The diseases to be dealt with under the Diseases of Animals Acts, and under Orders made by the Department in pursuance of the powers conferred upon them in that behalf, are:—Cattle plague, pleuro-pneumonia, foot-and-mouth disease, sheep-pox, sheep-scab, swine fever, rabies, anthrax, glanders or farcy, parasitic mange.

One of the chief tasks which engaged the attention of the Veterinary Branch during the past year was that of guarding against the introduction into Ireland of foot-and-mouth disease, which had, unfortunately, again been brought into England from abroad. The precautions adopted happily proved successful, and Ireland continues to be free from that dreaded pest.

Vigorous action was also taken for the suppression of swine fever and rabies, with the result that the swine fever outbreaks were reduced from 321 in the year 1899 to 233 in the year 1900, and the rabies outbreaks from ninety-two in the year 1899 to fifteen in the year 1900. Only two outbreaks of rabies have been confirmed in the present year, and there appears to be a reasonable prospect that this disease ere long will be finally extirpated.

Steps were also taken in conjunction with the Local Authorities to secure a more careful observance by sheep owners of the statutory provisions in force respecting sheep scab; and legal proceedings were instituted in numerous cases of non-compliance with the prescribed requirements in regard to this disease.

Many other duties devolve upon the Veterinary Branch, amongst which are the supervision and enforcement of the numerous regulations relating to the transit of animals by rail and sea, the cleansing and disinfection of railway pens, vessels, lairages, and other places used for animals in course of transit; the veterinary inspection of all cattle, sheep, and swine before they are allowed to be exported from, or imported into, Ireland, &c. The travelling inspectors engaged in connexion with these duties have proved of great use in further work to be described under the next heading, which has been undertaken by the Department.

It is unnecessary in this report to describe at length the operations of the Veterinary Branch, as a detailed account of its work will be found in the separate report already issued by the Department of Proceedings under the Diseases of Animals Acts in the year 1900 (Parliamentary Paper, *Cd.* 662, 1901.)

6. TRANSIT AND MARKETS.

Under this general head will be treated all that relates to the action and duties of the Department in connection with the transit of produce, and the conditions under which produce and live stock are sold in the markets. This subject includes the administration of the Food and Drugs Acts, the Fertilisers and Feeding Stuffs Acts, and the Markets and Fairs (Weighing of Cattle) Acts.

The Department have decided to group together the functions which come under this head, because they are closely related to each other, and because the inspection which the administration of the several Acts involves can for the most part be done by the same set of inspectors. This purpose was greatly facilitated by the attention which it was possible for the Chief Clerk of the Department to give to much of this work in connection with the administrative work of the Veterinary Branch, which he supervises, and by the Department being able to avail themselves for many new duties of the services of the travelling inspectors of the Veterinary Branch.

(*a*.)—TRANSIT.

In the Agriculture and Technical Instruction Act the purposes of agriculture are defined by section 30 to include "the aiding or facilitating of the carriage and distribution of produce." By section 17 of the Act the Department are empowered to take such steps as they think proper "for appearing as complainant on behalf of any persons aggrieved in reference to any matter (other than a matter affecting the Postmaster General) which the Railway and Canal Commissioners have jurisdiction to hear and determine."

The enactment of these two sections involves the placing upon the Department of a special responsibility in reference to the great question of transit, the importance of which, as a factor in the problem of the economic development of Ireland, the Department fully realise. Under the former section, which confers powers dealing more particularly with facilities, modes and conditions of transit, as distinct from rates, they have been able to take considerable action, with useful and promising results so far. The question of rates is a far more difficult one, and the Department have not felt it desirable as yet to appear as complainant before the Railway and Canal Commissioners as provided in section 17.

The Department were fortunate in having at their hand the staff of travelling inspectors already attached to their Veterinary Branch in connection with the Diseases of Animals Acts. It only needed to extend the duties of these inspectors and to add to their number to form them into the nucleus of an efficient Transit Staff. The duties for which the Transit Inspectors were originally employed mainly relate to the supervision of the arrangements prescribed under the Diseases of Animals Acts for the transit of animals by the railway and shipping companies, and the cleansing and disinfection of the waggons, pens, vessels, &c., used in such transit. The work done by the Transit Inspectors in this connection is fully detailed in the separate Report issued by the Department under the Diseases of Animals Acts [*Cd.* 662], 1901.

In the discharge of their duties under these Acts the Transit Inspectors are constantly travelling to all parts of the country. It was possible, while discharging these duties, to have regard also to the conditions under which other kinds of produce were being conveyed by rail and sea, and at the same time to do much of the inspection required by the Sale of Food and Drugs Acts, such as that of the registering of margarine dealers and manufacturers. The Department accordingly resolved to extend the duties of the Transit Inspectors in these directions and, to enable these duties to be the more efficiently discharged, they increased the staff and placed it under the direction of a Superintending Transit Inspector.

The first step undertaken by the Department in the new transit work was a comprehensive investigation into the conditions under which butter, eggs, fish, fruit, vegetables, and other articles of sensitive or perishable Irish produce are sent by the consignors, conveyed by the railway and shipping companies, and placed on the markets in Ireland and Great Britain. This enquiry was placed under the direction of the Transit Staff. It was begun in the summer of 1900, so that the conditions might be observed during the warm weather, when perishable produce runs most risk of injury.

The result of this enquiry has been to furnish the Department with authentic evidence that a state of things exists which calls for numerous and serious improvements in the methods of packing and consigning Irish produce, of handling and treating consignments during conveyance by road, rail, and sea, of keeping these goods for sale, and of placing them upon the markets, if Irish agricultural produce is to meet at all on equal terms the intense foreign competition against which it has nowadays to struggle.

The Department, with this information before them, were in a position to enter into communication with railway companies, shipping companies, and consignors, and this they accordingly did. They caused circulars to be addressed to the railway and shipping companies, describing the various causes which lead to the depreciation of the value of the produce by the time of its arrival at the places of sale, and making suggestions by which this regrettable state of things, so far as it is brought about while the produce is in the hands of the carrying companies, might be remedied. A circular was also addressed to the consignors of butter, urging an improved construction of boxes used for butter, scrupulous cleanliness, better methods of packing, and more careful handling of the packages while being moved to the carrying companies' premises. Copies of these circulars are given in the Appendices. A circular to consignors of eggs is also in course of preparation. Besides these steps, the Department's Superintending Transit Inspector has had interviews with managers of the leading carrying companies and with representative consignors.

It is too soon yet to speak of any positive results from such action; but the Department are able to say that their efforts so far have been met in a most satisfactory and promising spirit by the carrying companies and by the consignors. The former realise the great importance of the matter, and are already taking steps to effect several reforms.

The Department have in contemplation further action for the attainment of this purpose, and they trust that before long a substantial improvement in the mode of preparing the produce for transit, and in the conditions under which it is carried, will be effected generally throughout the country.

(*b*.)—SALE OF FOOD AND DRUGS ACTS.

The Sale of Food and Drugs Act, 1899, and the Agriculture and Technical Instruction (Ireland) Act, 1899, received the Royal Assent on the same day, the 9th August, 1899; but the former came into operation on the 1st of January, 1900, three months earlier than the Act by which this Department was established.

The Sale of Food and Drugs Act, 1899 (62 and 63 Vic., cap. 51), is the latest of a series of statutes for making better provision for the sale of food and drugs in a pure state. The previous Acts, which are still in force, are the Sale of Food and Drugs Act, 1875 (38 and 39 Vic., cap. 63), the Sale of Food and Drugs Amendment Act, 1879 (42 and 43 Vic., cap. 30), and the Margarine Act, 1887 (50 and 51 Vic., cap. 29).

The Act of 1899 should be read in connection with these three previously existing Statutes, which it amends and supplements.

Duty of Local Authorities to enforce the Acts.

The duty of the execution and enforcement of these Acts in each district primarily devolves upon the Local Authorities, and their responsibilities in the matter are very clearly and specifically stated in section 3 (1) of the Sale of Food and Drugs Act, 1899, which is as follows:—

"It shall be the duty of every Local Authority entrusted with the execution of the laws relating to the sale of food and drugs, to appoint a public analyst, and put in force from time to time, as occasion may arise, the powers with which they are invested, so as to provide proper securities for the sale of food and drugs in a pure and genuine condition, and in particular to direct their officers to take samples for analysis."

The Local Authorities for the purposes of these Acts are the thirty-three County Councils and the Town Councils of the following eleven boroughs, viz.:—Dublin, Belfast, Cork, Limerick, Londonderry, Waterford, Clonmel, Drogheda, Kilkenny, Sligo, and Wexford—a total of forty-four Local Authorities.

Powers of Department.

The Act, however, besides placing these responsibilities on the Local Authorities, confers important powers of administration and supervision upon the Department. Sections 2 and 24 enable the Department, in relation to any matter appearing to them to affect the general interests of agriculture in the county, to direct their officers to procure for analysis samples of any article of food. On the result of such analysis being communicated to the Local Authority, it thereupon becomes their duty to take proceedings as if they had caused the analysis to be made. It is further provided (section 3) that if the Department, after communication with a Local Authority, are of opinion that such Local Authority have failed to execute or enforce any of the provisions of the Sale of Food and Drugs Act, and that their failure affects the general interests of agriculture, the Department may by Order empower one of their officers to execute and enforce those provisions at the expense of the Local Authority in relation to any article of food mentioned in the Order. The Department, however, cannot prosecute unless the Local Authority fail to execute and enforce the provisions in question.

It was thus evident that the best action the Department could take was to stimulate the Local Authorities, and assist them by every means in their power to put the Acts into effective operation. This course the Department took in the ways described below.

Registration of Margarine Dealers and Manufacturers.

Under the Margarine Act of 1887 as extended by the Sale of Food and Drugs Act, 1899, the registration with the Local Authority of manufactories of margarine or margarine cheese, and of the premises of wholesale dealers in these substances, is made compulsory on the owners or occupiers of such places. The duty of directing the manner of such registration devolves on the Local Government Board, and the fact of each registration must be notified by the Local Authority to this Department. This provision and that which requires the manufacturers and dealers to keep a register of their consignments, offer one of the most effective means of detecting the places where margarine may be illegally put on sale.

The Department, finding that they were receiving very few notifications of registration in accordance with the first of these provisions, issued a circular letter on the 25th July, 1900, to the Local Authorities, drawing attention to the various requirements of the Acts as to registration and notification. Further communications were from time to time made to the Local Authorities on the subject when occasion required. As a result of these steps, and of the action of the Departmental Transit Inspectors who, in the course of their visits of inspection, found numerous cases in which registration had not been duly effected, the Department believe that the requirements of the Act as to the registration with the Local Authorities of the premises of manufacturers of or wholesale dealers in margarine or margarine cheese are now generally observed in the country.

Registers of Sales:—Inspection by Department's Officers.

Section 7 of the Sale of Food and Drugs Act of 1899 requires every manufacturer or a wholesale dealer in margarine or margarine cheese to keep a register posted up to date, showing the quantity and destination of each consignment of such substances sent out from his manufactory or place of business. This register must be open to the inspection of any officer of the Department, and a constant supervision is exercised over them. A number of irregularities and omissions have been reported by the inspectors, and the Department have in each instance taken up the matter with the person in default, with a view to the prevention of the recurrence of any similar failure to fully comply with the statutory requirements in this behalf. In the course of these inspections the inspectors have obtained information which has proved most useful in facilitating the detection of offences against the Acts.

Instructions to Local Authorities.

In the course of last year it became evident from various communications which reached the Department, and from the reports of their officers, that a considerable number of the Local Authorities very imperfectly realised the nature of the responsibilities imposed upon them by these important Acts; and, accordingly, early in October, the Department issued a circular to the Local Authorities, explaining in detail the principal provisions of the new Act so far as they were concerned, and drawing attention to the obligations imposed upon them for making adequate provision for taking samples of articles of food, and to the importance of appointing suitable sampling officers. Copies of this explanatory and instructional circular were also sent to the several police and other officers employed by the Local Authorities as inspectors under the Acts. Over 500 inspectors are so employed. The Transit Inspectors of the Department have also had numerous interviews with the responsible officers of the Local Authorities, and with the police on the question of the execution of the Acts; and the Department have lost no opportunity of endeavouring, where necessary, to induce the Local Authorities, by correspondence and otherwise, to more energetic and vigorous enforcement of the Acts than was the case in many districts before the new Act came into operation. The Department are glad to state that they have received the cordial co-operation of the Local Authorities of some of the most important centres in the country, and they trust that a general improvement in the local administration of these Acts will at no distant date be secured throughout the entire country.

From the foregoing statement it will be gathered that the action of the Department has been mainly devoted to stimulating the responsible Local Authorities to increased vigilance in the enforcement of the Acts. The Department considered that a reasonable interval of time should be allowed to elapse in order to afford the Local Authorities adequate opportunity to take the requisite steps, and arrange for the taking of samples for analysis on their own account before the Department could exercise the powers vested in them by the Act of 1899. It was felt, however, that without any intention of interfering with or superseding the Local Authorities, it would be quite feasible to supplement usefully their action in certain districts, and, accordingly, early in the present year, a special officer was temporarily appointed by the Department for the purpose of taking samples of butter for analysis. This officer, in the course of less than three months, took 179 samples, the great majority of which proved on analysis to be pure.

In eleven cases contravention of the Acts was shown to have taken place. The Local Authorities were at once communicated with. In eight instances they instituted legal proceedings; five convictions were obtained, one case was dismissed, and two are still pending. In three cases the Local Authority concerned did not consider it desirable to prosecute.

Regulations as to the Sale of Milk.

A further permissive power conferred by the Sale of Food and Drugs Act, 1899, upon the Board of Agriculture in Great Britain and upon this Department in Ireland, is that of making regulations—after such inquiry as may be deemed necessary—to determine what deficiency in any of the normal constituents of genuine milk, cream, butter, or cheese, or what additional extraneous matter or proportion of water therein shall raise a presumption until the contrary is proved that any of these commodities is not genuine or is injurious to health. Analysts are bound to have regard to such regulations in certifying the results of an analysis. Early in the year 1900 the Board of Agriculture for Great Britain appointed a Departmental Committee to report on the question of making regulations with respect to milk and cream. As a result of their report, special regulations on the subject have been issued. This Department has also made similar regulations for Ireland, which came into operation on the 1st September, 1901.

Water in Butter Committee.

On the initiative of the Department, a Joint Committee has recently been appointed by the Board of Agriculture for Great Britain and the Department to inquire into and report upon the advisability of framing special regulations with respect to butter. The Vice-President of this Department is Chairman of the Committee, which has already commenced its labours.

In the Appendices to this Report will be found the following documents:—

1. Circular issued by the Department to Local Authorities, October, 1900.
2. List of analysts under the Act.
3. Sale of Milk (Ireland) Regulations, 1901.

(*c*.)—FERTILISERS AND FEEDING STUFFS ACT.

The powers and duties of the Lord Lieutenant, acting by the advice of the Privy Council under this Act, which came into operation on the 1st January, 1894, were transferred to the Department as from the 1st April, 1900.

The purpose for which the Fertilisers and Feeding Stuffs Act was passed is to detect and prevent the adulteration of articles sold for use as fertilisers of the soil, or as food for cattle. The expression "cattle" in the Act means bulls, cows, oxen, heifers, calves, sheep, goats, swine, and horses.

Transferred Powers and Duties.

The power and duties under the Act, which have been transferred to the Department, include:

(*a*) The appointment of a chief agricultural analyst.

(*b*) The making of regulations in accordance with which purchasers of fertilisers or feeding stuffs, who are desirous of having analyses made under the Act by the district analysts, should take the requisite samples for that purpose.

(*c*) The framing of the forms of certificate to be used by the district analyst.

Analysts.

The Chief Agricultural Analyst for Ireland for the purposes of this Act is Professor T. E. Thorpe, B.SC. (Vic), P.H., F.R.S., Principal chemist of the Government Laboratory, who was appointed by Order of the Lord Lieutenant, dated 21st May, 1894.

The services of the Chief Analyst can be availed of when the seller or the buyer objects to the certificate of the District Analyst. In any such case a sample selected in accordance with the prescribed regulations may, at the request of the seller or the buyer, be submitted with the invoice of the article to the Chief Analyst, and such seller or buyer, as the case may be, is entitled, on payment of a fee sanctioned by the Treasury, to have the sample analysed by the Chief Analyst, and to receive from him a certificate of the result of his analysis.

The District Analysts for the purposes of the execution of the Fertilisers and Feeding Stuffs Act in Ireland are the analysts appointed by counties and boroughs under the Sale of Food and Drugs Act, 1875. The appointments of these analysts are subject to the approval of the Local Government Board for Ireland.

Reports by Analysts.

By section 5 of the Act every District Analyst is required to report to the Department, as they direct, the result of any analysis made by him in pursuance of the Act; and, accordingly, with a view to obtain information as to the extent to which the provisions of the Act as regards analyses were taken advantage of by the buyers of fertilisers and feeding stuffs for the protection of their own interests, a circular (copy of which is printed in the Appendices) was addressed to the Local Authorities in October last, asking them to instruct the District Analyst to report quarterly, in the forms provided by the Department for the purpose, the results of the analyses made by them under the Act. The information since supplied in response to this circular does not indicate that agriculturists in this country utilise the provisions of the Act to the extent which they might.

From the returns furnished to the Department by the District Analysts, it would appear that in the year 1900 they analysed seventy-two samples of fertilisers and forty-six samples of feeding stuffs. They were distributed as follows :—

County from which Analyses were reported by District Analysts.	Number of Samples Analysed in the Year 1900.		
	Fertilisers.	Feeding Stuffs.	Total.
Cork, . . .	10	17	27
Kildare, . . .	7	6	13
King's County, . .	1	-	1
Limerick, . .	-	1	1
Louth, . . .	-	4	4
Mayo, . . .	9	-	9
Meath, . . .	5	-	5
Queen's County, .	4	10	14
Roscommon, . .	7	-	7
Sligo, . . .	10	-	10
Tipperary, . .	1	-	1
Wexford, . .	17	5	22
Wicklow, . .	1	3	4
	72	46	118

Prosecutions.

Prosecutions for offences under the Act may be instituted either by the person aggrieved or by the Council of a county or borough, or by any body or association authorised in that behalf by the Department; but in the case of an offence under section 3 of the Act, a prosecution cannot be instituted by the person aggrieved or by any body or association except on a certificate by the Department that there is reasonable ground for the prosecution. No application for such certificate has yet been received by the Department.

It may be mentioned that section 3 makes the seller of any article for use as a fertiliser of the soil, or as a food for cattle, liable to a fine not exceeding £20 for the first offence, and for any subsequent offence to a fine not exceeding £50, if he—

(*a*) Fails without reasonable excuse to give, on or before or as soon as possible after the delivery of the article, the invoice required by the Act; or

(*b*) Causes or permits any invoice or description of the article sold by him to be false in any material particular, to the prejudice of the purchaser ; or

(*c*) Sells for use as food for cattle any article which contains any ingredients deleterious to cattle, or to which has been added any ingredient worthless for feeding purposes.

The Local Authorities were requested by the Department to furnish quarterly statements of any prosecutions instituted by them under the Act, with the results thereof, but it does not appear that any such prosecutions have been undertaken by Local Authorities in the year 1900.

Under section 17 (1) (*b*) of the Agriculture and Technical Instruction (Ireland) Act, 1899, the Department are empowered to take such steps as they may think proper for instituting proceedings under section 7 of the Fertilisers and Feeding Stuffs Act.

Having regard to the numerous other matters of pressing importance with which the Department have had to deal since April, 1900, they did not feel in a position to take action in pursuance of these powers during the period to which this Report relates. The Department, however, do not intend that the provision in question shall remain inoperative, and they will be prepared in due course to take such action thereunder as the requirements of the case may demand.

(*d*.)—THE MARKETS AND FAIRS (WEIGHING OF CATTLE) ACTS.

The powers and duties of the Irish Land Commission under the above cited Acts are now vested in the Department.

These Acts apply only to markets and fairs in which tolls are, for the time being, taken in respect of cattle (which term includes sheep and swine) by the lawful Market Authority.

It appears that tolls are collected at about 309 markets and fairs in Ireland. This number is only a proportion of all the markets and fairs held in the country. Many of the larger and important fairs, being "free" fairs, are thus excluded from the operation of the Acts.

Under the provision of these statutes, Market Authorities of markets and fairs where tolls are taken are required (unless specially exempted) to provide and maintain sufficient and suitable accommodation for weighing cattle. Failure to comply with this requirement renders it illegal for a Market Authority to demand, receive, or recover any toll in respect of cattle brought to the market or fair for sale so long as such failure continues. A similar obligation to provide facilities for weighing cattle is imposed in the case of any mart where cattle are habitually or periodically sold—the auctioneer being the responsible person in the matter.

Power is conferred upon the Department, on application made to them by a Market Authority, to issue an Order exempting for a period not exceeding three years at a time such authority from the requirements of the Acts, on the ground that the sale of cattle at the market or fair in question is, or is likely to be, so small as to render it inexpedient to enforce the provision and maintenance of a place for weighing cattle and of a weighing machine.

Very many of the markets and fairs in Ireland to which the Acts apply are unimportant in size, and the tolls collected are inconsiderable in amount. In such circumstances it would be hardly reasonable to oblige Market Authorities to incur heavy expense in providing weighing accommodation, especially where there is no local demand for it; and the practice has been to issue Exemption Orders in such cases after due inquiry into the applications submitted. Thirty-eight Exemption Orders were granted in the year 1900. In nearly all these cases the Orders were renewals of previously existing exemptions.

So far as the information at the disposal of the Department goes to show, it does not seem that the weighing accommodation which exists at several important towns in Ireland is very largely utilised. There are no official statistics available on the subject, except those supplied by the Dublin Market Authorities, from which it appears that during the year 1900 there were sold in the Dublin Corporation Market 41,446 fat cattle, of which 17,980 were weighed, and 138,632 fat sheep, of which only 1,663 were weighed. No returns have been received from the Market Authorities at Belfast or Cork, but the reports of the Department's officers, who report prices at fairs in Ireland, go to show that a very small percentage of weighing transactions take place at fairs where accommodation for weighing exists. No evidence of any kind has reached the Department to indicate that there is any general desire on the part of agriculturists in Ireland to adopt the practice of selling cattle by weight, owners of stock being apparently satisfied to carry on their sales by the traditional methods.

There seems to be an absence of any clearly expressed local feeling in favour of the enforcement of the requirements of the Acts, only one definite representation on the subject having been made to the Department by a Local Authority in the course of the year 1900. In that instance the Department have taken steps with a view to have suitable weighing accommodation provided at the particular fair which came within the scope of the Act, and at which the existing accommodation was found unsatisfactory.

This being their First Annual General Report, the Department felt it desirable that a considerable proportion of the foregoing pages should be devoted to a statement of the aims and principles which are intended to guide their action, and which it is necessary to have understood by the country if the work of such a Department in relation to agriculture, industries and technical instruction is to have a due measure of success in Ireland. In future years, as the purposes and methods of the Department become more familiar, it is hoped there will be less need for dwelling upon the principles underlying the operations which will be the subject of the Annual Reports.

I have the honour to be,
Your Excellency's faithful servant,
HORACE PLUNKETT,
Vice-President.

T. P. GILL,
Secretary.

DEPARTMENT OF AGRICULTURE
AND TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION STREET,
DUBLIN, 28*th September*, 1901.

APPENDICES.

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ACCOUNTS.

i

ENDOWMENT

[Fund administered by the Department, in concurrence with the regards certain special sums mentioned in Section 16 of the Act, Industries, and Technical Instruction; Agriculture and Technical

Account of RECEIPTS and PAYMENTS by the Department in respect furnished to the Comptroller

RECEIPTS.	AMOUNTS.		
	£	s.	d.
Parliamentary Grants (transferred from Vote Account)—			
Sum payable as an equivalent for the Salaries attached to Judgeships abolished, &c., in pursuance of the Supreme Court of Judicature (Ireland) (No. 2) Act, 1897, 60 and 61 Vic., c. 66, .	12,000	0	0
Sum representing the Amount of Expenses formerly paid out of Parliamentary Grants in connexion with Instruction given in Ireland in Agriculture, exclusive of such Instruction given in Elementary National Schools, ...	6,000	0	0
	18,000	0	0
Local Taxation (Ireland) Account—			
Sum formerly payable to the Commissioners of National Education under the Local Taxation (Customs and Excise) Act, 1890, 53 and 54 Vic., c. 61, sec. 3, ...	78,000	0	0
Sums paid to the Local Taxation (Ireland) Account pursuant to the Local Taxation (Ireland) Estate Duty Act, 1896, 59 and 60 Vic., c. 41, not required for the purposes of the Local Government (Ireland) Act, 1898, 61 and 62 Vic., cap. 37. .	166,886	0	0
	244,886	0	0
Irish Church Temporalities Fund—Annual Sum payable, .	70,000	0	0
H.M. Treasury—Sums carried to a separate Account under Section 13 of the Supreme Court of Judicature (Ireland) (No. 2) Act, 1897, 60 and 61 Vic., c. 66, in respect of Salaries attached to Judgeships abolished, &c., ...	19,890	5	0
Interest on Securities and on Moneys deposited, &c., . ,	3,016	10	8
	92,906	15	8
Securities held on 31st March, 1901—			
Local Loans Stocks, £200,000.			
Total, . .	£355,792	15	8

FUND.

Agricultural Board and the Board of Technical Instruction (except as *a*, *b*, *d*, *e*, *f*), for the purposes of Agriculture, Fisheries and other Instruction (Ireland) Act, 1899, 62 and 63 Vict., ch. 50]

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of the ENDOWMENT FUND for the Year ended 31st March, 1901, as and Auditor-General.

PAYMENTS.	Payments.	Receipts.	AMOUNTS. £	s.	d.
Buildings, Fittings, and Appliances, Royal Veterinary College of Ireland,			3,231	18	5
Grants sanctioned with the concurrence of the Board of Technical Instruction—					
County Boroughs sec. 16 (1) c. i.,			53	0	0
Elsewhere than County Boroughs and making, &c., Inquiries and collecting, &c., Information,			892	12	0
Sea Fisheries (Expenditure under Sec. 16, d.)—Payments, £2,657 0*s.* 2*d.*; Receipts, £131 13*s.* 7*d.*,			2,525	8	7
Travelling and Subsistence of Members of the Council and Boards,			501	18	0
Grants sanctioned with the concurrence of the Agricultural Board—					
Agriculture and other Rural Industries (including Expenses incurred under Section 17)—					
Albert Institution,	£5.112 10 9	£685 0 0	2,948	11	0
Albert Farm and Garden,	2,158 14 9	3,639 14 6			
Munster Institution and Farm,	3,510 8 6	2,432 6 3	1,078	2	3
Itinerant Dairy Instructors,	1,267 11 10	—	1.267	11	10
Agricultural Instruction,	1,417 6 0	932 18 9	434	7	3
Miscellaneous Expenses,	121 2 7	20 0 0	101	2	7
Rural and other Industries,			637	15	10
Grants to Agricultural Societies,			60	0	0
Fishing Industries,			68	13	6
Sea and Inland Fisheries—Scientific Investigation,			134	0	7
Travelling and Subsistence of Members of Special Committees,			218	11	5
Horse Breeding and other Live Stock Schemes,			651	15	10
Grants to Counties—Agricultural Schemes,			124	14	7
Sea Fisheries—(Purchase, Reconstruction, and Equipment of S.C. "Helga,")			11,847	12	8
Purchase of Securities,			199,724	8	2
BALANCE ON 31ST MARCH, 1901.			129,292	15	2
Total,			£355,792	15	8

PARLIAMENTARY GRANT.

[Moneys voted by Parliament to defray the Administrative Expenses of the Department, and Expenses connected with the maintenance of the Science and Art Museum, National Library of Ireland, Metropolitan School of Art, Royal Botanic Gardens, and Royal College of Science; and to provide for the payment of Grants in Aid under the Diseases of Animals Act, under Sec. 15 (*d* & *f*) of the Agriculture and Technical Instruction (Ireland) Act, 1899, and to the Congested Districts Board for Ireland.]

ACCOUNT OF PARLIAMENTARY GRANT for the Year ended 31st March, 1901, as furnished to the Comptroller and Auditor-General.

RECEIPTS.	AMOUNT.	PAYMENTS.	AMOUNT.
	£ s. d.		£ s. d.
Parliamentary Grant,	128,245 0 0	Salaries and Wages,	27,646 11 8
Appropriations in Aid,	434 3 2	Travelling,	2,924 19 5
		Special Services, Legal and Incidental Expenses,	986 11 6
		Collection of Agricultural Statistics,	2,058 5 7
		Grant in Aid, under Sec. 15 of the Agriculture and Technical Instruction (Ireland) Act, 1899,	18,000 0 0
		Diseases of Animals—Grants in Aid,	17,850 0 0
		INSTITUTIONS OF SCIENCE AND ART.	
		Salaries and Wages,	21,379 13 0
		Purchase of Specimens for Museum—(Grant in Aid),	2,300 0 0
		Purchase of Books for National Library—(Grant in Aid),	1,300 0 0
		Furniture, Materials, &c., and Fitting up of Objects,	1,928 9 0
		Royal College of Science—Purchase of Specimens, Books, Apparatus for Libraries, &c.,	1,046 17 1
		Royal College of Science—Prizes, Scholarships and Examinations,	1,384 7 11
		School of Art—Accessories and Models, Materials, &c.,	145 14 7
		Botanic Gardens—Purchase of Seeds, Plants, Books, and Garden Sundries,	738 8 9
		Travelling,	330 6 9
		Incidental Expenses,	586 9 1
		Congested Districts Board—Grant in Aid,	25,000 0 0
		Balance on 31st March, 1901,	3,072 8 10
Total, £	128,679 3 2	Total, £	128,679 3 2

SUSPENSE ACCOUNTS.

	Balance from 31st March, 1900.	Receipts in 1900-1901.	Expenditure in 1900-1901.	Balance on 31st March, 1901.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Purchase of Specimens for Science and Art Museum (Grant in Aid Fund),	887 12 2	2,300 0 0	2,850 19 5	336 12 9
Purchase of Books for National Library (Grant in Aid Fund), . . .	60 16 4	1,300 0 0	1,285 8 8	75 7 8
Fees, Royal College of Science, . .	297 19 0	1,278 10 0	814 12 7	761 10 5
Fees, Royal College of Science (Reserve Fund), ...	331 2 8	—	33 10 0	297 12 8
His Majesty's Stationery Office, . .	—	34 17 2	30 14 10	4 2 4
Total, ...	1,577 10 2	4,913 7 2	5,015 5 6	1,475 11 10

GENERAL CATTLE DISEASES FUND (IRELAND), INCLUDING

Account of RECEIPTS and PAYMENTS in respect of the GENERAL PNEUMONIA ACCOUNT (IRELAND), in the Year ended 31st March,

RECEIPTS.	AMOUNTS.	
	£ s. d.	£ s. d.
Balance on 1st April, 1900—		
General Cattle Diseases Fund (Ireland), . . .	12,143 6 11	
Cattle Pleuro-Pneumonia Account for Ireland, . .	4,084 0 3	16,227 7 2
GENERAL CATTLE DISEASES FUND (IRELAND) (57 and 58 Vict., cap. 57, sec. 71 (1))—		
Assessments on Local Authorities, ...	—	
Proportion of Fines, ...	1,596 9 11	1,596 9 11
CATTLE PLEURO-PNEUMONIA ACCOUNT FOR IRELAND OF THE GENERAL CATTLE DISEASES FUND—		
Parliamentary Grant-in-Aid of the Account: under the Diseases of Animals Act, 1894 (57 and 58 Vict., c. 57), for General Expenses, including Special Expenditure for the Protection of Imported Cattle, . , . . .	500 0 0	
Parliamentary Grant-in-Aid of the Account: for the Cost of the Execution of the Diseases of Animals Act, 1894 (57 and 58 Vict., c. 57), as respects Swine Fever, . .	17,000 0 0	—
Parliamentary Grant-in-Aid of the Account: in respect of Expenses in connection with the Suppression of Rabies,	350 0 0	17,850 0 0
Salvage, ...		2,807 2 6
Transferred from the General Cattle Diseases Fund (57 and 58 Vict., c. 57, section 73 (3)), ...		—
	£	38,480 19 7

THE CATTLE PLEURO-PNEUMONIA ACCOUNT FOR IRELAND.

CATTLE DISEASES FUND (IRELAND), including the CATTLE PLEURO-
1901, as furnished to the Comptroller and Auditor-General.

PAYMENTS.	AMOUNTS.	
	£ s. d.	£ s. d.
GENERAL CATTLE DISEASES FUND (IRELAND)—		
Recoupments to Local Authorities (57 and 58 Vict., c. 57, secs. 71 and 72),	4,901 8 3	
Fees,	5 5 0	
Travelling Expenses,	1 19 2	
Miscellaneous Expenses,	0 5 0	
Transferred to Cattle Pleuro-Pneumonia Account for Ireland of the General Cattle Diseases Fund (57 and 58 Vict., c. 57, sec. 73 (3)),	—	
		4,908 17 5
CATTLE PLEURO-PNEUMONIA ACCOUNT FOR IRELAND OF THE GENERAL CATTLE DISEASES FUND—		
General Expenses—		
Salaries (including the Pay of the Staff employed in Cleansing, Disinfecting, Branding, &c.),	5,162 5 9	
Fees,	377 13 0	
Travelling Expenses,	2,450 17 8	
Compensation to Owners of Slaughtered Swine,	7,343 8 0	
Miscellaneous (including the Cost of Requisites for Cleansing and Disinfection, and Casual Labour in Killing, Burying, Branding and Removal of Animals, and other Petty Expenses),	1,116 8 7	
Total General Expenses,		16,450 13 0
Rabies Expenses—		
Salaries,	78 16 0	
Travelling,	84 18 4	
Miscellaneous Expenses,	27 17 3	
Total Rabies Expenses,		191 11 7
Balance 31st March, 1901—		
General Cattle Diseases Fund (Ireland),	8,830 19 5	
Cattle Pleuro-Pneumonia Account for Ireland,	8,098 18 2	
		16,929 17 7
	£	38,480 19 7

COUNCIL AND BOARDS.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

Council and Boards, 1900.

I.—COUNCIL OF AGRICULTURE,
Arranged in Alphabetical Order according to Provinces.
II.—COUNCIL OF AGRICULTURE,
Arranged according to Counties, &c.
III.—AGRICULTURAL BOARD.
IV.—BOARD OF TECHNICAL INSTRUCTION.
V.—CONSULTATIVE COMMITTEE OF EDUCATION.

I.—COUNCIL OF AGRICULTURE, 1900.

[104 Members, including the President and Vice-President.]
Arranged in Alphabetical Order according to Provinces.

ULSTER (27 Members).

Name.	Address.
Andrews, Thomas,	Ardara, Comber, Co. Down.
Archdale, Edward, D.L.,	Castle Archdale Lisnarick, Co. Fermanagh.
Barbour, Frank,	Hilden, Lisburn, Co. Antrim.
Barton, H. D. M.,	The Bush, Antrim.
Best, William E.,	The Cairn, Aghalee, Co. Antrim.
Campbell, Rev. E. F.,	Killyman Rectory, Moy, Co. Tyrone.
Clark, Alexander L.,	Moyola Lodge, Castledawson, Co. Londonderry.
Faloon, Thomas,	Beech Lee, Lurgan, Co. Armagh.
Gallagher, Rev. James,	Monaghan.
Gilliland, George Knox, J.P.,	Brookhall, Londonderry.
Hayes, Thomas, J.P.,	Carrigart, Co. Donegal.
Jordan, Jeremiah, M.P.,	Enniskillen, Co. Fermanagh.
Law, Hugh A., J.P.,	Marble Hill, Ballymore, Letterkenny, Co. Donegal.
Lough, Arthur S., J.P.,	Drummully House, Killesbandra, Co. Cavan.
M'Govern, Thomas, M.P.,	Gortmore, Dernacrieve, Belturbet, Co. Cavan.
M'Kenna, Thomas P.,	Mullagh, Co. Cavan.
Magee, Michael J.,	Ashgrove, Newry, Co. Down.
Megaw, John, J.P.,	Ballyhoyland, Ballymoney, Co. Antrim,
Montgomery, H. de F., D.L.,	Blessingbourne, Fivemiletown, Co. Tyrone.
Murnaghan, George, M.P.,	Lisonally House, Omagh, Co. Tyrone.
Reade, R. H., J.P.,	Wilmont, Dunmurry, Co. Antrim.
Saunderson, The Right Hon. Colonel E. J., M.P., D.L.	Castle Saunderson, Belturbet, Co. Cavan
Sharman-Crawford, Colonel R. G., D.L.,	Crawfordsburn, Co. Down.
Simpson, William, J.P.,	Killeen House, Armagh.
Stewart, John W.,	Boghill, Coleraine, Co. Londonderry.
Stoney, Captain Thomas B., J.P.,	Oakfield, Raphoe, Co. Donegal.
Toal, Thomas,	Smithboro', Monaghan.

COUNCIL OF AGRICULTURE—*continued.*

LEINSTER (36 Members).

Name.	Address.
Anderson, Robert A.,	22, Lincoln-place, Dublin.
Brenan, Gerald J., J.P.,	Eden Hall, Ballyragget, Co. Kilkenny.
Brown, Stephen, J.P.,	Ard Caien, Naas, Co. Kildare.
Bryan, Captain Loftus A., D.L.,	Borrmount Manor, Enniscorthy, Co. Wexford.
Carew, Thomas M.,	Kildangan, Kinnegad, Co. Westmeath.
Cleary, Michael J., M.R.C.V.S.,	Dominick-street, Mullingar, Co. Westmeath.
Connellan, Major J. H., D.L.,	Coolmore House, Thomastown, Co. Kilkenny.
Corbet, William M.,	Killeigh, Tullamore, King's County.
Cunningham, Professor D. J., M.D., F.R.S.	43, Fitzwilliam-place, Dublin.
Delany, William, M.P.,	Roskeen, Killeigh, Tullamore, King's County.
Downes, Robert J.,	Russellstown, Mullingar, Co. Westmeath
Esmonde, Sir Thomas H. Grattan, Bart., M.P.	Ballynastragh, Inch R.S.O., Co. Wexford.
Everard, Colonel N. T., D.L.,	Randalstown, Navan, Co. Meath.
Field, William, M.P.,	Blackrock, Co. Dublin.
Finlay, Rev. T. A., M.A.,	University College, Dublin.
Garvey, Toler R., J.P.,	Thornvale, Moneygall, King's County.
Hanlon, Patrick,	Grangeforth, Carlow.
Heydon, Stephen,	Brownstown, Athy, Co. Kildare.
Inglis, Sir J. Malcolm, J.P.,	Montrose, Donnybrook, Co. Dublin.
Kavanagh, Walter M'M., D.L.,	Borris House, Borris, Co. Carlow.
Kelly, Laurence T.,	Ballymeelish Park, Ballybrophy, Queen's County.
Kennedy, P. J., M.P.,	Rathcore House, Enfield, Co. Meath.
King, Nicholas B.,	Knockdillon, Knockbridge, Dundalk, Co. Louth.
M'Carthy, James,	Newfoundwell, Drogheda, Co. Louth.
MacMahon, James, J.P.,	Ballyroan, Abbeyleix, Queen's County.
Maher, Thomas, J.P.,	Moyvoughly, Moate, Co. Westmeath.
Mayo, The Right Hon. The Earl of, D.L.,	Palmerstown House, Straffan, Co. Kildare.
Metcalfe Anthony, J.P.,	Lemonstown, Ballymore-Eustace, Co. Kildare.
Molloy, J. J., J.P.,	55, Harcourt-street, Dublin.
O'Neill, Patrick J., J.P.,	Kinsealy House, Malahide, Co. Dublin.
Peacocke, C. H., J.P.,	Belmont, Wexford.
Plunket, The Right Hon. Lord,	Old Connaught House, Bray, Co. Wicklow.
Reynolds, Henry, J.P.,	Ballinalee, Edgeworthstown, Co. Longford.
Ronaldson, William R.,	Barn Hall, Leixlip, Co. Kildare.
Troy, Thomas J.,	51, Ferrybank, Arklow, Co. Wicklow.
Wilson, James Mackay, J.P.,	Currygrane, Edgeworthstown, Co. Longford.

COUNCIL OF AGRICULTURE—*continued.*

MUNSTER (24 Members).

Name.	Address.
Barry, Thomas, ...	Ballingurrane, Killavullen, Co. Cork.
Barter, Richard, J.P., ...	St. Anne's, Cork.
Byrne, James, J.P., ...	Wallstown Castle, Castletownroche, Co. Cork.
Coghlan, Captain Wm. C., J.P., ...	Dromina, Passage East, Waterford.
Corcoran, Thomas, J.P., ...	Honeymount, Roscrea, Co. Tipperary.
Cummins, Edmond, J.P., ...	Brookhill, Fethard, Co. Tipperary.
Duggan, Thomas, ...	Two-mile-Borris, Thurles, Co. Tipperary.
Dwyer, William, ...	Elmville, Clonmel, Co. Tipperary.
Gilhooly, James, M.P., ...	Bantry, Co. Cork.
Glynn, Henry R., ...	Kilrush, Co. Clare.
Hogan, Patrick J., ...	Coolreagh, Bodyke, Co. Limerick.
Howard, Jeremiah J., J.P., ...	Lehenagh, Cork.
Linehan, Thomas, J.P., ...	Ballinvarrig, Whitechurch, Co. Cork.
Mackey, Anthony, ...	Castleconnell, Co. Limerick.
Mitchell Thomas B., J.P., ...	Ballybricken, Caherelly, Grange, Co. Limerick.
Monteagle, The Right Hon. Lord, K.P., D.L.	Mount Trenchard, Foynes, Co. Limerick.
Moore, Count, D.L., ...	Mooresfort, Tipperary.
Nugent, Edmond, ...	Ballymacarbery, Clonmel, Co. Tipperary
O'Driscoll, Alexander, J.P., ...	Valencia Island, Co. Kerry.
O'Gorman, George, ...	Kilkinedan, Farranfore, Co. Kerry.
Power, Thomas, J.P., ...	Dungarvan, Co. Waterford.
Ryan, Hugh P., ...	Roskeen, Thurles, Co. Tipperary.
Shaw, A. W., ...	Roxborough, Limerick.
Trench, George F., J.P., ...	Abbeylands, Ardfert, Co. Kerry.

CONNAUGHT (15 Members).

Name.	Address.
Byrne, Thomas, ...	Beechlawn House, Ballinasloe, Co. Galway.
Clonbrock, The Right Hon. Lord, H.M.L.,	Clonbrock, Ahascragh, Co. Galway.
Connolly, Rev. T. C., C.C., ...	Drumkeeran, Co. Leitrim.
Donohoe, Very Rev. Canon, P.P., V.F.,	Mohill, Co. Leitrim.
FitzPatrick, H. Lindsay, D.L., ...	Hollymount House, Hollymount, Co. Mayo.
Gore-Booth, Sir Josslyn, Bart., ...	Lissadill, Sligo.
Kelly, P. J., ...	Westport, Co. Mayo.
M'Hugh, P. A., M.P., ...	Sligo.
M'Loughlin, Rev. P., C.C., ...	Manorhamilton, Co. Leitrim.
Millar, John, ...	Ballydangan, Ballinasloe, Co. Galway.
Morrin, Daniel, ...	Foxford, Co. Mayo.
Nolan, Colonel John P., M.P., ...	Ballinderry, Tuam, Co. Galway.
O'Dowd, John, M.P., ...	Bunnanaden, Co. Sligo.
Pye, Joseph P., M.D., D.Sc., ...	Queen's College, Galway.
Webb, Patrick, ...	Loughglynn, Co. Roscommon.

II.—COUNCIL OF AGRICULTURE, 1900.

[104 Members, including the President and Vice-President.]

Arranged according to Counties, &c.

ULSTER.

County.	Name.	Address.
	MEMBERS APPOINTED BY COUNTY COUNCILS.	
Antrim, . .	Megaw, John, J.P., ...	Ballyboyland, Ballymoney, Co. Antrim.
	Best, Wm. E., ...	The Cairn, Aghalee, Co. Antrim.
Armagh, .	Faloon, Thomas, ...	Beech Lee, Lurgan, Co. Armagh.
	Simpson, Wm., J.P., ...	Killeen House, Armagh.
Cavan, . .	M'Kenna, Thomas P., ...	Mullagh, Co. Cavan.
	M'Govern, Thomas, M.P.,	Gortmore, Dernacrieve, Belturbet, Co. Cavan.
Donegal, . .	Stoney, Capt. Thos. B., J.P.,	Oakfield, Raphoe, Co. Donegal.
	Hayes, Thomas, J.P., ...	Carrigart, Co. Donegal.
Down, . .	Andrews, Thomas, ...	Ardara, Comber, Co. Down.
	Magee, Michael J., ...	Ashgrove, Newry, Co. Down.
Fermanagh, .	Archdale, Edward, D.L.,	Castle Archdale, Lisnarick, Fermanagh.
	Jordan, Jeremiah, M.P.,	Enniskillen, Co. Fermanagh.
Londonderry, .	Clark, Alexander L., ...	Moyola Lodge, Castledawson, Co. Londonderry.
	Stewart, John W., ...	Boghill, Coleraine, Co. Londonderry.
Monaghan, .	Gallagher, Rev. James, ...	Monaghan.
	Toal, Thomas, ...	Smithboro', Monaghan.
Tyrone, . .	Montgomery, H. de F., D.L.	Blessingbourne, Fivemiletown, Co. Tyrone.
	Murnaghan, George, M.P.	Lisonally House, Omagb, Co. Tyrone.
	MEMBERS APPOINTED BY THE DEPARTMENT.	
	Barbour, Frank, ...	Hilden, Lisburn, Co. Antrim.
	Barton, H. D. M., ...	The Bush, Antrim.
	Campbell, Rev. E. F., ...	Killyman Rectory, Moy, Co. Tyrone.
	Gilliland George Knox, J.P.,	Brook Hall, Londonderry.
	Law, Hugh A., J.P., ...	Marble Hill, Ballymore, Letterkenny, Co. Donegal.
	Longh, Arthur S., J.P., ...	Drummully House, Killeshandra, Co. Cavan.
	Reade, R. H., J.P., ...	Wilmont, Dunmurry, Co. Antrim.
	Saunderson, The Right Hon. Colonel E. J., D.L., M.P.	Castle Saunderson, Belturbet, Co. Cavan.
	Sharman-Crawford, Col. R. G., D.L.	Crawfordsburn, Co. Down.

COUNCIL OF AGRICULTURE—*continued.*

LEINSTER.

County.	Name.	Address.
	MEMBERS APPOINTED BY COUNTY COUNCILS.	
Carlow,	Kavanagh, Walter M'M., D.L.,	Borris House, Borris, Co. Carlow.
	Hanlon, Patrick, ...	Grangeforth, Carlow.
Dublin,	O'Neill, Patrick J., J.P.,	Kinsealy House, Malahide, Co. Dublin.
	Molloy, J. J., J.P., ...	55, Harcourt-street, Dublin.
Kildare,	Ronaldson, William R.,	Barn Hall, Leixlip, Co. Kildare.
	Heydon, Stephen, ...	Brownstown, Athy, Co. Kildare.
Kilkenny,	Connellan, Major J. H., D.L.	Coolmore House, Thomastown, Co. Kilkenny.
	Brenan, Gerald J., J.P.,	Eden Hall, Ballyragget, Co. Kilkenny.
King's Co.,	Delany, William, M.P.,	Roskeen, Killeigh, Tullamore, King's County.
	Corbet, William M., ...	Killeigh, Tullamore, King's County.
Longford,	Reynolds, Henry, J.P., ...	Ballinalee, Edgeworthstown, Co. Longford.
	Wilson, James Mackay, J.P.	Currygrane, Edgeworthstown, Co. Longford.
Louth,	King, Nicholas B., ...	Knockdillon, Knockbridge, Dundalk, Co. Louth.
	M'Carthy, James, ...	Newfoundwell, Drogheda, Co. Louth.
Meath,	Everard, Colonel N. T., D L.	Randalstown, Navan, Co. Meath.
	Kennedy, P. J., M.P., ...	Rathcore House, Enfield, Co. Meath.
Queen's Co.,	Kelly, Laurence T., ...	Ballymeelish Park, Ballybrophy, Queen's County.
	MacMahon, James, J.P.,	Ballyroan, Abbeyleix, Queen's County.
Westmeath,	Maher, Thomas, J.P., ...	Moyvoughly, Moate, Co. Westmeath.
	Downes, Robert J., ...	Russellstown, Mullingar, Co. Westmeath.
Wexford,	Esmonde, Sir Thomas H. Grattan, Bart, M.P.	Ballynastragh, Inch R.S.O., Co. Wexford.
	Peacocke, C. H., J.P., ...	Belmont, Wexford.
Wicklow,	Metcalfe, Anthony, J.P.	Lemonstown, Ballymore-Eustace, Co. Kildare.
	Troy, Thomas J., ...	51, Ferrybank, Arklow, Co, Wicklow.
	MEMBERS APPOINTED BY THE DEPARTMENT.	
	Anderson, Robert A., ...	22, Lincoln-place, Dublin.
	Brown, Stephen, J.P., ...	Ard Caien, Naas, Co. Kildare.
	Bryan, Captain Loftus A., D.L.	Borrmount Manor, Enniscorthy, Co. Wexford.
	Carew, Thomas M., ...	Kildangan, Kinnegad, Co. Westmeath.
	Cleary, Michael J., M.R. C.V.S.	Dominick-street, Mullingar, Co. Westmeath.
	Cunningham, Professor D. J., M.D., F.R.S.	43, Fitzwilliam-place, Dublin.
	Field, William, M.P., ...	Blackrock, Co. Dublin.
	Finlay, Rev. T. A., M.A.,	University College, Dublin.
	Garvey, Toler R., J.P., ...	Thornvale, Moneygall, King's Co.
	Inglis, Sir J. Malcolm, J.P.	Montrose, Donnybrook, Co. Dublin.
	Mayo, The Right Hon. the Earl of, D.L.	Palmerstown House, Straffan, Co. Kildare.
	Plunket, The Right Hon. Lord.	Old Connaught, Bray, Co. Wicklow.

COUNCIL OF AGRICULTURE—*continued.*

MUNSTER.

County.	Name.	Address.
	MEMBERS APPOINTED BY COUNTY COUNCILS.	
Clare,	Glynn, Henry R., ...	Kilrush, Co. Clare.
	Hogan, Patrick J., ...	Coolreagh, Bodyke, Co. Limerick.
Cork,	Howard, Jeremiah J., J.P.,	Lehenagh, Cork.
	Barry, Thomas, ...	Ballingnrrane, Killavullen, Co. Cork.
	Gilhooly, James, M.P., ...	Bantry, Co. Cork.
	Linehan, Thomas, J.P., ...	Ballinvarrig, Whitechurch, Co. Cork.
Kerry,	O'Gorman, George, ...	Kilkinedan, Farranfore, Co. Kerry.
	O'Driscoll, Alexander, J.P.	Valencia Island, Co. Kerry.
Limerick,	Mitchell, Thomas B., J.P.,	Ballybricken, Caherelly, Grange, Co. Limerick.
	Mackey, Anthony, ...	Castleconnell, Co. Limerick.
Tipperary (N.),	Corcoran, Thomas, J.P.,	Honeymount, Roscrea, Co. Tipperary.
	Duggan, Thomas, ...	Two-Mile-Borris, Thurles, Co. Tipperary.
	Cummins, Edmond, J.P.,	Brookhill, Fethard, Co. Tipperary.
Tipperary (S.),	Dwyer, William, ...	Elmville, Clonmel, Co. Tipperary.
	Power, Thomas, J.P., ...	Dungarvan, Co. Waterford.
Waterford,	Nngent, Edmond, ...	Ballymacarbery, Clonmel, Co. Tipperary.
	MEMBERS APPOINTED BY THE DEPARTMENT.	
	Barter, Bichard, J.P., ...	St. Anne's, Cork.
	Byrne, James, J.P., ..	Wallstown Castle, Castletownroche, Co. Cork.
	Coghlan, Captain Wm. C., J.P.	Dromina, Passage East, Co. Waterford.
	Monteagle, The Right Hon. Lord K.P., D.L.	Mount Trenchard, Foynes, Co. Limerick.
	Moore, Count, D.L., ...	Mooresfort, Tipperary.
	Byan, Hugh P., ...	Roskeen, Thurles, Co. Tipperary.
	Shaw, A. W., ...	Roxborough, Limerick.
	Trench, George F., J.P.,	Abbeylands, Ardfert, Co. Kerry.

CONNAUGHT.

County.	Name.	Address.
	MEMBERS APPOINTED BY COUNTY COUNCILS.	
Galway,	Byrne, Thomas, ...	Beechlawn House, Ballinasloe, Co. Galway.
	Pye, Joseph P., M.D., D.Sc.	Queen's College, Galway.
Leitrim,	M'Loughlin, Rev. P., C.C.,	Manorhamilton, Co. Leitrim.
	Donohoe, Very Rev. Canon, P.P., V.F.	Mohill, Co. Leitrim.
Mayo,	Kelly, P. J., ...	Westport, Co. Mayo.
	Morrin, Daniel, ...	Foxford, Co. Mayo.
Roscommon,	Webb, Patrick, ...	Longhglynn, Co. Roscommon.
	Millar, John, ...	Ballydangan, Ballinasloe, Co. Galway.
Sligo,	O'Dowd, John, M.P., ...	Bunnanaden, Co. Sligo.
	M'Hngb, P. A., M.P., ...	Sligo.
	MEMBERS APPOINTED BY THE DEPARTMENT.	
	Clonbrock, The Right Hon. Lord, H.M.L.	Clonbrock, Ahascragh, Co. Galway.
	Connolly, Rev. T. C., C.C.,	Drumkeeran, Co. Leitrim.
	FitzPatrick, H. Lindsay, D.L.	Hollymount House, Hollymount, Co. Mayo.
	Gore-Booth, Sir Josslyn, Bart.	Lissadill, Sligo.
	Nolan, Colonel John P., M.P.	Londonderry, Tuam, Co. Galway.

III.—AGRICULTURAL BOARD.

(14 Members.*)

Name.	Address.	By whom appointed.
Byrne, James, J.P., ...	Wallstown Castle, Castletownroche, C. Cork.	The Department.
Clark, Alexander L., ...	Moyola Lodge, Castledawson, Co. Londonderry.	The Department.
Esmonde, Sir Thomas H. Grattan, Bart., M.P.	Ballynastragh, Inch R.S.O., Co. Wexford.	Leinster Provincial Committee.
Everard, Colonel N. T., D.L.	Randalstown, Navan, Co. Meath.	The Department.
Gore-Booth, Sir Josslyn, Bart.	Lissadill, Sligo, ...	The Department.
Healy, Most Rev. John, D.D., Lord Bishop of Clonfert.	Mount St. Bernard, Ballinasloe, Co. Galway.	Connaught Provincial Committee.
Kelly, Most Rev. Denis, D.D., Lord Bishop of Ross.	Skibbereen, Co. Cork, ...	Munster Provincial Committee.
Magee, Michael J., ...	Ashgrove, Newry, Co. Down.	Ulster Provincial Committee.
Montgomery, H. de F., D.L.	Blessingbourne Fivemiletown, Co. Tyrone.	Ulster Provincial Committee.
Moore, Count, D.L., ..	Mooresfort, Tipperary,	Munster Provincial Committee.
Nolan, Colonel John P., M.P.	Ballinderry, Tuam, Co. Galway.	Connaught Provincial Committee.
O'Neill, Patrick J., J.P.,	Kinsealy House, Malahide, Co. Dublin.	Leinster Provincial Committee.

IV.—BOARD OF TECHNICAL INSTRUCTION.

(23 Members.*)

Name.	Address.	By whom appointed.
Barbour, Frank, ...	Hilden, Lisburn, Co. Antrim.	Ulster Provincial Committee.
Beamish, Ludlow A., ...	Ashgrove, Queenstown, Co. Cork.	The Department.
Clancy, Most Rev. John, D.D., Lord Bishop of Elphin.	Sligo, ...	Connaught Provincial Committee.
Daly, Alderman John, Mayor of Limerick,	Mayor's Office, Limerick,	Limerick County Borough Council.
Dempsey, James, ..	York-road, Belfast, ...	Belfast County Borough Council.
Dowd, Alderman Patrick	32, South City Markets, Dublin.	Dublin County Borough Council.
Finlay, Rev. T. A., M.A.,	University College, Dublin.	Leinster Provincial Committee.
FitzGerald, Right Hon. Edward, Lord Mayor of Cork.	Geraldine-place, Cork, ...	Cork County Borough Council.
†Fitzgerald, George F., F.R.S.	7, Ely-place, Dublin, ...	The Department.
Goff, William G. D., ...	Glenville, Waterford, ...	Waterford County Borough Council.
Harrington, Right Hon. Timothy, M.P., Lord Mayor of Dublin.	Mansion House, Dublin,	Dublin County Borough Council.
Jaffe, Sir Otto, J.P., ...	10, Donegall-square, S., Belfast.	Belfast County Borough Council.

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* By section 24 (2) of the Agriculture and Technical Instruction (Ireland) Act, 1899, the President and Vice-President of the Department are ex-officio Members of the Board.

† Since deceased.

BOARD OF TECHNICAL INSTRUCTION—*continued.*

Name.	Address.	By whom appointed.
Lally, Very Rev. P., P.P.,	Galway, ...	The Department.
M'Learn, Sir William, Mayor of Londonderry	Carrickmore House, Londonderry.	Londonderry County Borough Council.
Martin, Rev. William Todd, D.D.	College House, College-green, Belfast.	Intermediate Education Board.
Monteagle, Rt. Hon. Lord K.P.	Mount Trenchard, Foynes, Co. Limerick.	Munster Provincial Committee.
Musgrave, Sir James, Bart., D.L.	Drumglass House, Belfast.	The Department.
Pile, Sir Thomas, Bart.	3, Kenilworth Sq., Rathgar.	Dublin County Borough Council.
Starkie, William J. M., Litt.D.	Tyrone House, Marlborough-street, Dublin.	Commissioners of National Education.
Taylor, Alexander, ...	46, Agnes street, Belfast,	Belfast County Borough Council.
Wallace, William, ...	Dunleary House, Monkstown, Co. Dublin.	Joint Committee of Councils of the County Dublin Urban Districts.

V.—CONSULTATIVE COMMITTEE OF EDUCATION.

(5 Members.)

Name.	Address.	By whom appointed.
The Rt. Hon. Horace Plunkett, M.P., Vice-President of the Department.	Department of Agriculture and Technical Instruction, Dublin.	Ex officio.
The Most Rev. William J. Walsh, D.D., Archbishop of Dublin.	Archbishop's House, Drumcondra, Co. Dublin.	Intermediate Education Board.
William J. M. Starkie, Litt.D.	Tyrone House, Marlborough-street, Dublin.	Commissioners of National Education.
Rev. W. Todd Martin, D.D.	College House, College-green, Belfast.	Board of Technical Instruction.
T. P. Gill, ...	Department of Agriculture and Technical Instruction, Dublin.	Agricultural Board.

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DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

MEMORANDUM ON AGRICULTURAL EDUCATION FOR IRELAND,

BY THE RIGHT HON. HORACE PLUNKETT, P.C.,
VICE-PRESIDENT OF THE DEPARTMENT.

NOTE.—The following Memorandum defines the lines on which the Department of Agriculture and Technical Instruction are prepared to promote a system of Agricultural Education for Ireland. It has been considered and approved by the Agricultural Board.

TO THE IRISH FARMER AND HIS FRIENDS.

Why cannot Ireland, depending chiefly upon agriculture, have a system of Agricultural Education at least equal to that which the farmers of any other country enjoy? While my colleagues and myself have been busily engaged setting the new Department, with its varied functions, to its work, this question has been constantly before our minds, and the sense of its importance has daily increased. The more we examine into the conditions with which we have to deal in our task of rendering the highest service which a central administrative body of the kind can render to our country, the more conscious we become of the fact that education, in its broadest sense, is the chief agency of progress which we can employ. As regards urban and manufacturing districts this principle is generally accepted. It is equally true in its bearings upon rural life, although its application to the conditions and needs of the farming community—the application with which this memorandum is specially concerned—is less obvious and more difficult to define.

We have now succeeded in agreeing upon a policy, and in formulating what we hope will be found to be a sufficiently definite and comprehensive scheme for the attainment of the end in view. It will be seen that our scheme, being a graft on the educational tree rather than a separate growth, will need the active co-operation of educational and administrative bodies other than ourselves. Above all, it will require the support of the great mass of the farming community, who will, we are confident, in this matter sustain the historic reputation of the Irish people as lovers of education. While, therefore, this explanation of the Department's scheme is primarily an official pronouncement addressed to County Councils and others who are expected to take action upon it, I propose to treat the whole subject from the point of view of those chiefly concerned, and I hope that our conclusions, and the reasoning upon which they are based, will commend themselves to the intelligence of the practical farmers of Ireland.

FUNDAMENTAL PROPOSITIONS.

Before we can apply our minds earnestly to this question, there are two propositions which I must ask you to accept without argument. The first is that Irish farming does admit of an improvement which, if effected, would involve a vast addition to the nation's wealth, would greatly enhance the comfort and well-being of the people, and would tend in some measure to check the deplorable drain of emigration. I shall also ask you to admit that, whatever other causes may account for the backwardness of our agricultural methods, even if all these causes were removed, a thoroughly sound and modern system of agricultural education must precede any considerable or rapid progress towards a high state of efficiency in this our chief industry. If we are thus far agreed—and I am sure we shall be—I may proceed, without further delay, to submit what I believe to be the principles upon which such a system may be provided for Ireland. And let me ask you to bear in mind that existing farmers as well as the rising generation have to be included in a general scheme, not only because, owing to the now constant application of science to agriculture, it is difficult for the working farmer unaided to keep himself abreast of every new development, but also, because we need the hearty co-operation of the fathers of the young men and the young women whom we desire to start out upon a career of home industry with the educational advantages enjoyed by the most progressive agricultural communities abroad.

NECESSITY FOR SOUND PRINCIPLES FROM THE OUTSET.

In outlining a policy on such a vastly important subject, the Department has to consider not only what is theoretically best, but, also, what is practicable having regard to the machinery through which it must work, and the funds at its disposal. As you will see we do not propose any large capital expenditure at this stage. Some capital sums now, a good deal later on, may have to be sunk in land, buildings, and equipment for the purposes of agricultural teaching. But I cannot exaggerate the importance of extreme caution in embarking upon this outlay until we are sure that its utility will be permanent. It would be worse than a waste of money and energy, to inaugurate elaborate schemes which might be found on experience of their working, to have been premature or unsound, and which might have to be dropped or entirely remodelled. I would impress upon you that any waste of the resources of to-day by unwise expenditure is a trifling consideration compared with the mortgage we should be placing upon the industrial capacities of future generations of our countrymen were we now, at this crisis in the economic life of the nation, to start out upon wrong educational lines.

THE CLASSES WE WANT TO REACH.

One test which we shall all apply to any system that is proposed for the teaching of agriculture will be the number of persons actually engaged in the calling of agriculture who will be brought within reach of the educational facilities afforded. There are in Ireland over half a million farmers and labourers with the usual proportion of sons and daughters. These cannot all be educated at once; but they are all part-owners of the Department's funds, and we must try to give them all, so far as possible, an opportunity of deriving direct or indirect benefit from the Department's schemes. Information and advice to the adult, practical education to the young, must be as widely diffused as is possible with the funds and the machinery under our control.

I will first discuss the problem of agricultural education in the usually accepted sense of the term as applying to the training of young men and young women who are of the farming classes. A good deal of misconception exists as to what exactly is the problem we have to solve. If it were simply a question of the purchase of so many acres, the erection and equipment of buildings, the engagement of staffs of professors and assistants, I would have published a scheme long ago which would have worked splendidly—on paper. But here are the real questions we have to answer. Where shall we get the pupils we want to teach? For what career shall we seek to fit them? At what age shall we take them? How long a course shall we give them? What previous education must they have had? What fees can they afford to pay? If we want Agricultural Colleges of the type with which we are familiar in England, I daresay we could have first rate institutions of the kind. Through them we might not only give what is usually considered a good agricultural education to selected Irishmen, but we might even attract students from England and Scotland as well. We might turn out land agents, surveyors, land stewards, gentlemen farmers, colonists, and such like by the score—perhaps even an occasional Vice-President! But, while institutions of this kind will, no doubt, find a place in our completed system, what I am sure we shall most of us agree should be the chief object of the Department is to provide an education for young men who intend to follow the calling of farmers where they are born and bred. We must induce their fathers to send them from the farms, and induce them to go back to the farms and take their part in building up from its very foundations the industry upon which by universal agreement the welfare of Ireland must, so far as we can see into the future, ever mainly depend. There is our practical problem—to make Irish farming more profitable, and—I attach immense importance to this —more interesting to those actually engaged in it. The more you think of it the more you will be convinced that it is primarily and chiefly a question of education. But the education must be applied with a thorough knowledge of the conditions of the country, with a discerning sympathy with the sentiments which prevail in the agricultural community, and in a well-considered relation to those existing educational systems which, as you are aware, are undergoing modifications of the greatest importance to the work we have in hand.

THE CHIEF DIFFICULTIES TO BE SURMOUNTED.

We now come face to face with the real difficulties which have to be overcome. All educational reform is confronted with this adverse condition, that the supply has to precede the demand. A full understanding of the value of education, and consequently a desire for it, is only given to those who have enjoyed its advantages. We have already had the most gratifying proof that among the Irish farming classes are to be found far more than the usual proportion of local leaders who are enthusiastic advocates of agricultural education. Nevertheless, the difficulty I have referred to exists in rural communities in Ireland as it does elsewhere. And there is another factor to be taken into account. The difficulty of getting hired labour is increasing year by year, and farmers simply cannot afford to send their sons to any school or college which is either likely to make them discontented with the opportunities of their home life, or to deprive the farm of their labour, even for a year or two, during the working months.

Let us, however, for the moment dismiss from our minds the difficulty of getting pupils and teachers, and apply ourselves to the question—how and where the pupils are to be taught? The further questions, what they are to be taught and from what source the new supply of teachers is to be drawn, I will deal with when I come to explain more fully the Department's system.

THE RELATIONS BETWEEN AGRICULTURAL EDUCATION AND THE EDUCATIONAL SYSTEMS OF THE COUNTRY.

I must here state another general proposition about education, to which too much importance cannot be attached. All the educational systems of a country, all its educational institutions are, or at least ought to be, interdependent. Whatever is done in the way of practical education, regard must be had to the existing educational systems, primary, secondary, and higher. I press this proposition upon my readers because, when in conversation, I have outlined our scheme to some whose opinion I value, I have noticed a sense of disappointment that the Department is not prepared to introduce with a few bold strokes some startling new developments with an embodiment in bricks and mortar which all the world can see and admire. This mode of proceeding has been sufficiently tried both in Agricultural and Industrial Education, and has given way to the wiser policy of treating the education of a country as an organic portion of the country's life, discharging its varied functions in a well considered relation with each other. We must profit by the teaching of other countries who have purchased experience in this matter—and purchased it often rather dearly—and recognise that when our system of agricultural education is established, it cannot stand alone. Any school in which agriculture is specially taught will depend for its utility—if not for its pupils—quite as much upon other schools as upon itself.

Our educational systems have made no preparation for such institutions as those which most of us thought the new Department would hasten to establish. They are doing so, however. The Commissioners of National Education, as you are aware, are at present endeavouring to reform their entire system; they are introducing into all the National Schools a new programme, the principal aim of which is to render the instruction in these schools more practical, and to give it a more direct relation to the business in life for which the majority of the pupils are intended. Thus, in the primary schools, the attempt is now being made to fit the pupils for receiving the benefits of the further stages of practical education whether their careers be agricultural or industrial. At the same time our own Department has this year taken over the administration of the grant commonly known as the Science and Art Grant, which has hitherto been administered by the Board of Education, South Kensington; and we, in our turn have issue a new Programme of Experimental Science, Drawing, Dome

Economy, and Manual Instruction, which will enable all the existing secondary schools in Ireland to prepare in their degree pupils for the further stages of practical education. Furthermore, this new Programme of our Department has now been adopted as part of their general programme by the Commissioners of Intermediate Education, so that from this year also every Intermediate and Secondary School in Ireland will be aided by the grants from our Department and from the Intermediate Education Board to introduce the system of practical science teaching which is not only an important part of general education, but which is absolutely necessary to pupils who desire to pass on to the more advanced or more technical stages of agricultural education. It is our hope that, while nearly all of these schools will take up this new curriculum in the interests of the study of science generally in Ireland, some of them—and perhaps others yet to come—where natural conditions and facilities point that way, will so adapt themselves as to make special provision for practical agricultural courses for pupils coming from rural districts. The work which at this moment our Department and the other educational authorities are engaged in doing in such schools is absolutely essential for the development of any system of agricultural and industrial education, and the County Councils throughout the country cannot better prepare the way for their own and the Department's joint educational work, than by helping them in every possible way to introduce this great reform.*

POSTPONEMENT OF INSTITUTION BUILDING.

I have, in the foregoing, stated the case for the utilisation of existing agencies—the development of that which we have, rather than the more showy expedient of brand new institutions. I think this course will approve itself to the mature judgment of the country. Nothing would be easier than to copy some of the admirable schemes for agricultural education which Continental countries have made so successful, and to present a plausible appearance of adaptation to our own conditions. While the Recess Committee found almost everywhere abroad some lessons most applicable to the problem we are discussing, they were, quite early in their investigations, made alive to the danger of mere servile imitations. These Continental models are most alluring, because they are both efficient and economical. Many of them seem so exactly to deal with the conditions of Ireland that their transplantation looks as easy as putting up a Swiss chalet on a Wicklow mountain. But what does not appear on the face of these schemes is the history of their growth and the educational atmosphere with which they are surrounded. If you will give us all the help we ask, we hope, in a not distant future, to make no poor show alongside of the best of them. Meanwhile let us avoid the illusory attempt to reap where we have not sown.

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* Perhaps I ought to make it clear here, when referring to primary and secondary schools, and to the Department's administration of the Science and Art Grant that we by no means look upon the education of the country as if it ought altogether be turned in the direction of technical instruction, whether in relation to agriculture or urban industries. We take a broader view of education than that: and, moreover, the Department has an educational function beyond that given to it in its special capacity of organiser of a system of technical instruction. As the Administrator for Ireland of the Grant for Science and Art, a duty which was hitherto discharged from South Kensington, it is bound to have regard to the interests of general education. It is on that footing, and with that end in view that we enter, with the Intermediate Education Board, the general secondary schools of the country. We are speaking here, however, specially of agricultural education and of such of the existing and future schools of this country as can naturally lend themselves to this particular purpose, while at the same time serving the purposes of general education—schools so aptly located, dealing already with so large a proportion of rural pupils, that to give them a special agricultural side would assist them in their true function as regards these pupils, that of making educated farmers.

POSTPONEMENT OF PROVINCIAL AGRICULTURAL COLLEGES.

The provision in our Act of £10,000 to be applied in connection with the Munster Institution was generally taken to foreshadow the early erection of a Provincial Agricultural College, and the Department was influentially approached, as soon as it was created, with a view to the establishment of similar Institutions for the provinces of Ulster and Connaught. I may say at once that any province which could solve its educational problem in this way would find the Department most anxious to provide its full share of the funds required. It is only human nature that the Vice-President should desire to erect such monuments to his educational zeal during his term of office. Indeed I may confess that I was grievously disappointed when certain castles in the air vanished before the knowledge which, owing to the pressure of miscellaneous duties, it took me a year to obtain. But, unhappily, we cannot honestly recommend the country to begin at this end, because our system of agricultural education in Ireland, which we are only about to construct, will not for some years yet be ripe for provincial collegiate institutions of this type. They might do some good, but it is clear that they would not meet the needs of the half million farmers of Ireland, and would not ensure the support of the County Councils. They might even do positive harm by retarding what you will see presently is one of the primary objects of the Department—the creation of a belief in and a desire for practical education in the minds of the working farmers of Ireland. In England and in Scotland the County Councils have had the same problem to deal with. There they have had the start of us in education, and their conditions are much more favourable to the provincial college type of institution. They have tried this type in many places for the past ten years, and so far as the purpose of meeting the direct needs of the working farmer is concerned, the system has been a failure. Such colleges turn out agricultural professors, it is true, but they do not turn out farmers, and the farmers do not resort to them. They are now beginning to change the system, and after ten years of the work of the itinerant instructor, (to be presently explained) several of them have an agricultural population better fitted for the benefits of these institutions. Let us not repeat the mistakes of the English and Scottish County Councils, but take advantage of the experience they have purchased at much expense.

THE DEPARTMENT'S SCHEME OF AGRICULTURAL EDUCATION.

I have now endeavoured to come to an agreement with you as to the objects to be aimed at, and as to the general principles to be observed in seeking their attainment. It has been necessary to devote a good deal of space to the discussion of what we ought to avoid. The ground had thus to be cleared for the presentation of the scheme which the Department submits as the best under existing circumstances, and which, so far as its local features are concerned, it will do its utmost to put into practical operation at the earliest possible moment in any county where the co-operation of the County Council is assured.

Our scheme at the outset is threefold in its operation. It consists of itinerant instruction, of the utilisation of existing schools, and of the training of teachers. But at a further stage, which will be reached at an earlier or a later date according to local conditions, but which should not be prematurely forced, technical schools to serve a county or smaller area, either exclusively or partially for the special teaching of agriculture, will be required. These may, and we hope will, lead up to higher agricultural institutions aided by groups of counties, the provincial line being observed if there be any strong sentiment or practical convenience to be served thereby. But first let me explain as clearly as I can the different steps in the procedure I have outlined, beginning with the system of itinerant instruction upon the successful operation of which the working out of our scheme will largely depend.

ITINERANT INSTRUCTION.

We hope eventually to see established as part of the educational machinery of every county in Ireland an Itinerant Agricultural Instructor whose services shall be given exclusively and permanently to the particular county to the Council of which he is attached. If there is one feature of agricultural education which, having been tested to the utmost in every country of the world, has stood that test better than any other, it is the itinerant instructor. In our researches at the time of the Recess Committee this was a feature which in every country the administrator and the educationist laid stress upon, as showing invariably most fruitful results; and all the experience of the Department since has confirmed us in the faith which the experience both of England, Scotland, the Continent, Canada, and America, had implanted in our minds.* .

Now what are the functions, the work and the qualifications of the itinerant instructor? His principal function, in a word, is to be the guide, philosopher and friend of the existing farmers. While no doubt, a good many of the younger generation, even of the boys of school-going age, will derive benefit from the teaching of the itinerant instructor, and while he will render an important service in supervising the practical course of agriculture in the schools in the county to be referred to later on, still his main concern is with the actual working farmers. For them it would be unnecessary to attempt a scheme of systematic instruction in the principles of agriculture. Comparatively few farmers wish to know by what mode of reasoning the scientific expert arrives at the conclusion that while one class of soil would be benefited by an application of lime, a second should have a dressing of basic slag, and a third a mixture of basic slag and kainit. Similarly with regard to every branch of agriculture, be it crop raising or milk production, the average farmer wants to know the most profitable practice to follow under a given set of conditions. Tell him this and he will readily dispense with the scientific reasons on which the advice is based. But for all that much can be done even in this process to increase the number of thinkers among the farming classes. Exactly what effect we may produce time and the working out of the entire scheme alone can show. But we should aim at making every farmer an observer, an experimenter, and so a possible contributor to the progress of Agricultural Science. Of course we all know that the chief means to this end is, by supplying the youth of the country with such a training as will give them the power of working out agricultural problems on a scientific basis. But by bringing home to the existing farmers what is the practical outcome of that which has already been accomplished by the application of science to agriculture, a good beginning can be made. Some people believe that this can be accomplished by means of the agricultural press and by leaflets. We hold strongly that printed information cannot possibly be made as efficient as the living agent.

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* Curiously enough, the Commissioners of National Education tried the experiment half a century ago. It was abandoned as unwarrantable State interference with industry in the hey-day of the Manchester School.

QUALIFICATIONS OF THE ITINERANT INSTRUCTOR.

The itinerant instructor must be a man who has had a first class training in science—such a training as will enable him to rely on his own judgment in deciding what should, and what should not, be recommended. But a first class training in science is not enough. If possible, he should have been born to farming, and should have been steeped in it from his boyhood. Only then can he properly estimate the difficulties with which the farmer has to contend. Incalculable harm has been done to the cause of agricultural education by purely scientific men who too often are accustomed to speak lightly of the farmers' difficulties. In doing so they display great ignorance. Accustomed to work under the constant conditions that can be maintained in the laboratory they would have the farmer to cultivate his land and feed his animals in accordance with formulæ deduced from laboratory experiments. They overlook the fact that farmers have to contend with a number of varying factors of a meteorological, biological or economic nature. Some of these scientific gentlemen have themselves tried farming according to formulæ, with the result that they have learned to place a higher estimate on the intelligence of the farmer, and the farmer a lower estimate upon the value of scientific training. The Department will set its face against such teachers of agriculture, and more particularly against itinerant instructors in agriculture who are mere scientists, no matter how distinguished they may be.

Before dismissing the question of the qualifications of the itinerant instructor, it is desirable to add that these instructors should be familiar with, and able to accommodate themselves to, the manners and customs and the sentiments of the people. I admit that a sufficient supply of such men will for some time be hard to get. Plenty of them have been born, but few made. We are making some, and the Department will, as I shall presently explain, lose no time in taking the necessary steps to meet the demand for these functionaries, which is already growing apace. But it must be remembered that the training of a functionary of this special and important type is not the work of a day, and that it will be wiser to wait for a thoroughly trained and competent man than to appoint a man imperfectly qualified to discharge such very responsible duties.

WORK OF THE ITINERANT INSTRUCTOR.

I will now give a rough sketch of the work and functions of the itinerant instructor. It is during the winter months that farmers have most leisure to attend meetings; the work of the itinerant instructor should therefore begin early in October, and should at that stage take the form of lectures on subjects chosen to suit the class of farming in the respective districts. The county should be divided into districts which might, or might not, correspond with the Rural Districts, and the lecturer's time so arranged that he would get over the whole county by an early date in March. Let us suppose that a county has five districts; that the lecturer remains four weeks in each, and that he delivers five lectures per week. Let us further suppose that five centres are selected in each district, named A, B, C, D, and E, respectively. At A, the instructor would lecture on four consecutive Monday evenings; at B, on four consecutive Tuesday evenings; at C, on four consecutive Wednesday evenings; and so on. A week would then elapse between two lectures at any centre, which would give the farmer ample time to think over the preceding lecture, and make a note of questions to be asked at the next meeting.

Having spent four weeks in one district, the instructor would pass on to the second district, and having spent four weeks there, would pass on to the others in turn. In twenty weeks he would have got round the five districts, and would have delivered 100 lectures. At each centre, in a circuit or district, a local committee would be formed, composed of County Councillors, Rural District Councillors, or other persons selected owing to their interest in the work. The duty of the committee would be to advertise the lectures by means of posters, leaflets or advertisements in the local papers, and arrange for a chairman at each meeting, and for the heating and lighting of the room, which would usually be in the National school.

The business of the itinerant instructor would be to treat the subject of each lecture in a practical manner, stating what definite facts are known with regard to it, and to reply to questions which should be freely invited at the close of each address. It has been found in Ireland, and elsewhere, that the discussion and questions at the close of each lecture are even more valuable and take up more time than the lecture itself. The importance of this cannot be over-estimated, as it gives farmers an opportunity of stating their experiences, which is profitable, not only to the rest of the audience, but also to the instructor himself, who in turn carries from parish to parish valuable practical information.

In addition to the lectures in the evening the instructor should, during the day, visit the farms in the neighbourhood, when invited to do so, and inspect the lands, buildings, and stock, in order that, knowing the conditions under which farming is carried on, he may be able to frame his information to suit the requirements of the district. As it would be an important part of his work in spring and summer to conduct field experiments with manures and seeds, the fields on which these tests are to be made should be chosen during the time he is stationed in the district so as to save valuable time in spring when he would be busy attending to these experiments on the demonstration plots.

During summer, field demonstrations should be arranged for the purpose of showing the influence of the manures used in the experiments and the good or bad qualities of any new variety of potato, grain, or other crop which may have been put under test. In autumn he would have to see these crops harvested, and prepare leaflets giving the results of the trials, which should also form the subject of further lectures.

But the work of the itinerant instructor would not end in a district where he had given his lectures and conducted an experiment. The number of questions on practical subjects which continue to arrive at the Department, show quite clearly that there is a growing demand for information on specific subjects, and the demand always increases in districts where the itinerant instructor has been at work stimulating thought and action among farmers. It would be the duty of the instructor to be always ready to answer questions addressed to him by letter from farmers in any part of the county. Such questions for example as the best mixture of manure for different crops and soils—the best mixtures of grasses for any special purpose—the best and cheapest form of feeding stuffs for milk production or for calf feeding, or for kindred purposes—the money value of artificial manures—where new varieties of seed potatoes are to be obtained—the name of a grass—the name of a weed, and what is known concerning the best method of eradicating it—how the smaller farmer may take advantage of the Department's live stock schemes, or of any other which may be issued—and a host of similar questions too numerous to mention.

In addition to all this it would be his duty to keep constantly under his eye the practical agricultural course given in such schools in the county as included such a course in their curriculum.

An itinerant instructor who can gain the confidence of the people, and who, by showing a readiness to assist them in procuring the most recent information on every subject connected with their business, can become a power for great good in a county—this is the class of instructor that the Department wish to see.

OTHER FORMS OF ITINERANT INSTRUCTION.

I have spoken hitherto of only one type of the itinerant instructor—the Instructor in Agriculture—because this is in the main, the permanent type whose work we hope to see established as part of the regular administrative life of every county. But there will be other instructors for special subjects and industries. Already in a few counties we have itinerant instructors in poultry keeping, whose business it is to teach, especially the women—the wives and daughters of the farmers and labourers—how to rear poultry on the most efficient lines. Similarly we hope there will be dairy instructresses and teachers of bee-keeping, cottage gardening, fruit growing and every similar industry by means of which the labourer and small farmer can be shown how to make the most of his holding. We hope, moreover, to have itinerant instruction in cookery and domestic economy, provided for districts in which the school facilities do not suffice for the teaching of these subjects to the girls of the agricultural classes. To these matters I will refer again further on.

THE TEACHING OF AGRICULTURE AT SCHOOLS.

I hope some counties will demonstrate in the near future that I have not exaggerated the assistance we may give to and get from the existing farmers in setting our new educational system to work through the scheme of itinerant instruction carried out in the manner I have detailed. This is, however, only one means towards the educational development we have in our minds. We are quite aware that we shall only begin to discover the possibilities of farming when science is properly applied to it, and this can only be when we have, among the farmers themselves, a body of men trained from school days to observe and interpret accurately the influence of environment on plant and animal life. It is to the younger generation we must look for this class, and it will not be long before the advance guard of them comes to our assistance. For this reason we must have as soon as possible a graduated system of education, of which practical science will form an important part.

I say "practical" science because I desire to emphasise the purpose that scientific training will serve in our Secondary Schools. It is now recognised that mere information in regard to the facts of science constitutes only a part—and a small part—of the function that science should exercise in an education intended to fit a youth for the business of life. The instruction must be directed to the cultivation of a habit of thought, to the scientific method, and to secure this, it becomes necessary that the student should not merely be told, but that he should find out these facts for himself—as far as may be—under careful and enlightened direction. As much depends upon the manner in which he has acquired this knowledge as upon the actual possession of it.

In primary education, as you are aware, we have no direct function. But we must rely upon the Commissioners of National Education to give us a good foundation to build upon, as they must rely upon us to see to the stability of the superstructure. They know what we want. We do not want children in the primary school to be taught practical farming. School farms are based on a wholly wrong conception of the training of the young mind at the age when the greatest effect is produced in the moulding of the faculties. Some educationists equally condemn school gardens, though I should say they might at least be made healthful, pleasurable, and elevating adjuncts to the playground. What we do want, and what the National Education Commissioners are now preparing to provide, is, that the children should be given elementary notions of science, and a training of the faculty of observation through illustrations of scientific teaching drawn from the physical surroundings of rural life—a course which has come to be called "Nature knowledge."

AN EDUCATIONAL GAP.

At the present time when a boy in any Irish rural district has completed his career at the National school, say at the age of thirteen, usually his education stops. This is the most serious gap in our educational system. The years from thirteen to, say, seventeen are the formative years, the most valuable years for the purpose of education, and these years, to the vast majority of Irish country lads, are educationally lost. In many districts the boy is put to work about the farm at thirteen, or even earlier; in other districts he may not take his part in the regular labour of the farm till he is fourteen or fifteen; but everywhere his education ceases once he has left the National school, and everywhere the country boy at this period of his life practically runs loose during the winter months. The effect of this experience generally is, that at the age of seventeen he has forgotten the best of anything he learned at school. He is thus, moreover, quite unfitted to receive the class or grade of agricultural education which in a developed system would be available for young men of that age. Now this, I need not say, is no way to bring out the intelligence of the Irish farming class. It is indeed the most effective way that could be conceived of stultifying that intelligence. I think the best work we shall do with our scheme of agricultural education in rural districts will be to fill up this disastrous educational gap.

We propose to arrange so that the education of the country child need not stop when he has passed the sixth class of the primary school, but may be continued. We propose to open the door of the secondary school, or the secondary stage of education to him, and to adapt the teaching in the secondary grade so as directly to advance him in the practical training necessary for his career in life. If the primary school does its part, the boy who completes his course therein, will be qualified to enter a secondary school; and if the secondary schools—existing schools situated in country towns, or in or near rural districts, or new secondary schools, which may hereafter be started, or National schools which may in certain rural centres find it possible to add on to their primary work a secondary and practical side—if such schools do their part, they will be in a position, to begin with, to give the boy two years, or two winter courses of essential training in practical science, together with a training in the keeping of farm accounts and the conducting of business correspondence, and to continue at the same time his general education. At the end of these two years or, perhaps, in some cases, during these years, the boy will be fit for a special course of practical or technical agriculture. This course should last for two winter sessions of about five months each—the winter sessions being selected so as not to take the boy from the work of the farm during the busy months of the year—and should, if possible, be given at one of the secondary, or one of the developed primary schools above referred to. The course wherever given would be under the constant supervision of the county itinerant instructor and of the inspectors of the Department. Now all along that road from the primary school onward, the way of the rural boy must be facilitated. We propose that the secondary school, which will be aided by our grants and those of the County Councils shall give its teaching, so far as may be possible, at such fees as will be within the reach of the poorest. And we propose that for every rural district, by means of grants from the County Council aided by grants from the Department, a certain number of scholarships or "bursaries" shall be provided which will enable boys leaving the primary schools to obtain their training in the secondary schools free; and we propose that this system of aid by bursaries and scholarships shall be continued through every educational grade, so that after the secondary grade the more brilliant or exceptional boys who had shown a special aptitude for the advanced study of agricultural science might pass on from the secondary school to the agricultural college, and so on up to the re-organised Royal College of Science and the university. Thus, I hope we shall be able fairly to boast, when our work is sufficiently developed, that we have opened an avenue by which the son of the poorest farmer or labourer who has sufficient native talent, may advance, free of cost to his father, from the rural primary school right up to the highest institutions in which will be trained the future Irish savants and professors whose duty it will be to carry on and develop the work of applying science to our agricultural problems.

A word must here be said in regard to the education of girls. For girls we hope to establish a similar link, as in the case of boys, between the primary and the secondary school; and in the girls' secondary schools special emphasis will be given to the teaching of domestic science. This needs no justification. Whatever her future in life may be, a girl will in all probability sooner or later be concerned with the care and well-being of others, and a training in household management (including cookery, &c.) the principles governing the maintenance of health (including sick-nursing) and the care of the young, must be regarded as an important part of a girls' educational equipment. As those girls for whom this scheme makes special provision, will belong to the agricultural classes, this teaching should include also, dairying, poultry management, and care of farming stock, &c. In many districts instruction of this kind must be taken to the very doors of our people, and just as in the matter of agricultural education, so in regard to what, for the want of a better term we may call household economy, we hope by means of well-trained itinerant instructresses to carry this means of training into even remote rural districts.

THE HIGHER INSTITUTIONS AND THE TRAINING OF TEACHERS.

The Department do not disguise from themselves the difficulty which confronts the launching of such a scheme as I am describing, owing to the dearth of qualified teachers for the new work. But for the earlier stages of the work in the schools—for that Programme in Experimental Science, Drawing, Manual Instruction, and Domestic Economy already referred to—much can be done by a series of special courses, given to existing science and art teachers, which the Department have organised in centres at Dublin, Cork, and Belfast. The training of teachers for special agricultural instruction will be slower work. For the training of these, however, the Department have at hand certain educational agencies which happily they can adapt to their purpose.

The Department have taken over, as you are aware, the existing institutions known as the Albert Model Farm, Glasnevin, and the Munster Dairy School and Agricultural Institute at Cork. Although, for reasons I have fully set out above, we do not intend at present to multiply such institutions, we mean to make the utmost use of those which we already have. We shall immediately take steps to organise the work both at Glasnevin and at Cork, so as to make them serve the objects of the Department's general education programme. As that programme demands instruction both for young men and young women, and as the present system of having alternate classes of men and women at each institution is attended with considerable loss of efficiency, the Department have resolved to reorganise and extend the existing Munster Dairy School as a higher class school of farm and domestic economy for girls only. On the domestic side, the pupils will be taught laundry work, cooking, needlework, &c., while on the farm side, the Department hope to equip the school for the highest form of dairy instruction, coupled with such other branches of instruction as are required to fit young women either to become farmers' wives, dairymaids, or instructresses in these subjects. Fortunately, the past history of the Munster Dairy School shows that it has a distinct sphere of utility in the technical training of girls. What is obviously required is that this branch of its work should be encouraged, and the Department will spare no effort in making the institution one of the best of its kind in any country.

The question of the provision for male agricultural pupils in connection with the Munster Institute, as distinct from the existing Dairy School, is one which the nature of the case suggests should he specially considered, in the first instance, from the point of view of so important a county as Cork. Whether that provision should take the form of a technical agricultural school of the secondary grade already described, which might grow eventually into a provincial college, or whether the County Council will prefer to delay their help towards meeting local educational needs in the less ambitious directions until the situation is ripe for a collegiate institution, practical circumstances will determine, and, I am confident, will determine satisfactorily. What is manifest is, that for such a demand for the higher grades of agricultural teaching as at present exists in Ireland or as is likely to exist for the next two or three years, there is ample provision now at the disposal of the Department in other institutions, the more important of which the Imperial Exchequer will fully maintain without our having to draw either on the Department's special endowment, or on the rates of the County Councils. The institutions to which I refer are the Albert Model Farm, Glasnevin, and the Royal College of Science. Until it becomes clear that these institutions are insufficient to meet the increasing needs for higher agricultural teaching for male students, the Department cannot recommend any province to devote its resources to providing locally for this grade of technical instruction.

The Glasnevin Institution, then, in its turn, will cease to take in female pupils, and will be reorganised and altered, so as to fit it still more completely for the training of young men who intend to follow the higher branches of farming, or to become instructors in technical agriculture. In the past there has been a fair demand for instruction of this kind at this Institution, but the demand for places has not equalled the capacity of the school. Now that it is to be made an institution entirely to be devoted to young men, it is expected that for some time to come it will far more than suffice to meet the normal demand, as well as the special demand, created by the introduction of the programme of the Department. I may add that courses for young men desiring to become creamery managers will be continued there. I will not enter here into the details of the character of the instruction to be imparted or of the changes and additions that are about to be made at this institution. It is sufficient for me to state that no effort will be spared to make its equipment of the best.

It is not, however, proposed that the young men who attend the Glasnevin Institution should be provided there with a training in the very highest forms of agricultural science or with facilities for agricultural research. For this purpose there is available a still higher institution, which is now also under the control of the Department, viz., the Royal College of Science in Dublin, which is about to be thoroughly reorganised so as to take its place, as the principal Technical College for Ireland, in the educational programme of the Department. That programme, indeed, would be incomplete if it did not provide Ireland with at least one institution for the very highest form of teaching and research in science applied to Industries and Agriculture, and the Department are fortunate in having such an institution to their hand. Among other developments which it is intended, shall take place at this institution,

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is the provision of a Chair in Agriculture, which will be one of the most important faculties. Unlike the other Institutions, which must be maintained out of the Department's own endowment and local rates, the Royal College of Science is to be rebuilt, staffed, and specially equipped as well as maintained out of funds furnished by the Imperial Treasury. As the Department are fully alive to the necessity for providing the highest form of scientific research, they hope to make this institution under its new form rank among the best in Europe.

The highest form of agricultural instruction and agricultural research can only be carried out efficiently where land and farm buildings are available. It is proposed, therefore, that there should be a close connection between the Agricultural Faculty of the Royal College of Science and the Model Farm at Glasnevin, where, in addition to the provision for the training of technical agriculture with which I have already dealt, a special provision will be made for attacking those problems which the staff of itinerant instructors show require solution for the benefit of Irish agriculture.

Anticipating the reorganisation of the Glasnevin Institute and of the Royal College of Science, as well as the demand for itinerant instructors, the Department as far back as last October provided facilities for laying the foundation for intending instructors of agriculture. They then entered for the first session of a complete three years' course six farmers' sons. A further batch will be put in training this year, and this process will be continued until the demand has been fully met. We are also considering the provision of a limited number of travelling scholarships for young men whose capacity as teachers seems likely to be increased thereby.

There is already an urgent demand from some counties where this part of the system is already understood, for itinerant instructors, and many other counties will soon be on the look-out. In the hope that a certain number of young men might be found who had already had a sufficient amount of scientific training and practical experience to require a comparatively short further training to fit them for this work, the Department made provision for special courses of instruction in agricultural subjects to be given in Dublin this summer, and they invited such young men as had the necessary qualifications to make application to attend these courses, in order to equip themselves if possible for entering upon the work of itinerant instructors next October, by which time we may be in a position to meet a moderate demand. Such a plan as this is, I need not say, a mere expedient for supplying the more pressing needs of the moment.

RURAL INDUSTRIES.

There is one factor which should be kept in view in considering a system of agricultural education for Ireland, and that is the development of rural industries. I have refrained hitherto from referring to rural industries in this memorandum, for fear of overloading a scheme which is mainly educational. At the last meeting of the Council of Agriculture, however, an interesting discussion took place which convinced us that our scheme would not be hampered or misunderstood, but, on the contrary, would be rendered far more acceptable and gain many valuable adherents, if we made it clear that we aim, not only at the improvement of the farming industry in all its branches, but also at the profitable and congenial home employment of the farmer's family. The Department are quite alive to this vital element of the question. As the Recess Committee's Report pointed out, there are only about 240 days in the year during which people can work upon the land, and "how to fill the remaining interval, for a population mainly agricultural, with remunerative, wholesome and dignifying occupation is, not only an economic, but a social and moral problem of the highest interest to a nation." The general need moreover, of not merely educating the people in industrial pursuits, but also of endeavouring to secure that they will find scope for their abilities in industries here at home rather than elsewhere is, of course, evident. We want to make our educational system not an impetus to emigration, but an element in minimising the exodus from our country. Educated farmers and artisans working in Ireland—such is our ideal.

But it is important here that a clear line of distinction should be drawn between industries that require the labour of the worker all the year round and all the working day—and which are most suitable to urban communities—and industries intended to furnish occupation for the spare time of an agricultural population. It is these latter we are here considering, and it cannot be too clearly understood that such industries should be regarded as subsidiary to agriculture, and that it would be a most unsound course if, for their sake, the tillers of the soil should come to neglect the main industry of agriculture, or the womenkind of the farmer's family give less attention to those duties connected both with the farm and the household which are the most valuable contribution they can make to the economy of rural life.

This principle borne in mind, the development of home industries in agricultural districts can be pursued with all available energy. The successful introduction of such industries will call for much thought, careful experiment, and patient effort. The Congested Districts Board have shown that much can be done by direct teaching and judicious subsidies. We cannot quite follow in their steps, for we have not nearly the same amount of funds available for this mode of action. On the other hand, we can, to a degree not practicable in the congested area, lean upon private enterprise which, when supplemented by our system of practical education, must after all be the chief factor in the actual creation or development of industries. When the children of the people have had, from the earliest educational stage, the training of the hand and eye, the systematic development of the faculty of observation, and, in the further educational stages, specialised instruction having a direct relation with agricultural and industrial life, we shall have the greatest of all agencies for the development of industries—a trained population. The work of so training the population (as will have been seen, if this memorandum has succeeded in making its meaning clear) has begun already. But it will take some years before this process will have produced its chief result. In the meantime, much may be done by careful local enterprise and initiative, aided by special information, special instruction, and other forms of special aid furnished by the Department. The County Councils must assist in promoting such rural industries as circumstances determine to be suitable to their respective districts. Expert industrial instructors will be provided by the Department for these industries when proper local action has been taken, and the Department will labour to qualify itself to act as, so to speak, the Intelligence Office of the country, for such industrial development.

It would be but a waste of time to give here lists of possible industries, or to discuss their relative suitability to the various parts of the country. Outside the poultry, dairying, and flax industries, they should, let it be repeated, be small home and cottage handicrafts, or industries directly connected with agricultural crops or fruit, such as cider-making, starch-making, fruit preserving, &c. Perhaps one possible notable exception may be mentioned—the woollen industry, which might become a large factory industry in rural districts. But it should be remembered that industries of this latter kind require capital and commercial enterprise for their development. The chief eventual factor to be provided in order to attract capital and enterprise is an industrial class—a class with the habits and methods of industrial life—in a word, a trained labour supply. And education liberally interpreted will prove the principal means to this end.

UNIFORMITY IN PRINCIPLE—VARIETY AND ELASTICITY IN DETAIL.

It may appear strange to some who read this scheme that the Department should in such an important matter have felt justified in propounding one general policy for the whole of Ireland. A little thought upon the objects which it is sought to attain, and the machinery to be set in motion, will show the necessity of proceeding upon well-defined uniform principles in agricultural education. The necessity arises from the nature of all sound educational work, and it is especially felt in connection with that co-ordination which it is so important to establish between the different educational systems of the country. These systems ought to be administered upon uniform principles, and, if we were to launch a lot of schemes based upon no definite idea, and having no common principles underlying them, it would be impossible for the other educational authorities, however anxious they might be to do their part in the elevation of our rural life, to extend to us that hearty co-operation without which any attempt to solve the problem of agricultural education would but make confusion worse confounded.

In thus insisting that the principles upon which we proceed must be uniform, let me make it quite clear that there will be equal necessity for the greatest elasticity in the practical application. Elasticity is dictated by the variety of local conditions to be met with in Ireland—a variety remarkable in proportion to the size of the country. Even excluding the congested districts, we find wholly diverse systems of agriculture, from dairying to flax cultivation, from barley growing to cattle grazing. There will also be the greatest variety in the number of pupils seeking agricultural education, and in the time which it may be necessary to take in the different counties for the various stages of the scheme to mature before further progress is attempted. The teacher difficulty, which will, I fear, be acute for some years, will act as an automatic brake upon any too precipitate educational developments.

CONCLUSION.

I have now discharged to the best of my ability, the task of submitting on behalf of the Department in broad outline a comprehensive scheme of agricultural education for Ireland. If we gain a general acceptance for what we have thought out, we shall enter upon our task with a force of enlightened public opinion behind the County Councils and the Central Authority, which will ensure the smooth and effective working of the new machinery. I have not attempted to steer a safe course between the two rocks of destructive criticism, upon one or other of which attempts to deal practically with Irish problems are most commonly wrecked. Some will say that the scheme assumes a degree of educational zeal which belonged to generations of Irishmen long ago, which may characterise generations yet unborn, but which is not manifest to-day. I admit that I have formed a high estimate of the educational spirit of my countrymen, and the circulation of this pamphlet among Irish farmers with the full approval of the Agricultural Board shows that they are of the same mind. Others who have great influence upon the thought and action of the Irish people have no patience with any partial attempts to deal with national problems, the solution of which, in their opinion, must either await the concession or the abandonment of a political demand. In reply, I have only to say that, by which ever side this view may be put forward we cannot afford to yield to it. The latest Census figures are on all our minds, and tell the tale of a continued exodus even more exhausting in the quality than in the quantity of the drain. We must remember that the phenomenon of a rural exodus is not peculiar to Ireland now: the depletion of rural districts is going on in most European countries. The problem of how to rehabilitate rural life is not exclusively an Irish problem. But in Ireland its solution is of greater urgency than in any other country, for the simple reason that the towns to which our people fly are three thousand miles from our shores. What is but migration elsewhere is emigration here. These considerations clearly indicate the necessity for a many-sided national effort. Happily the social side of Irish rural life is being brightened by more than one new movement, which, so far from diverting the attention of the rural classes from the urgent need for an improved system of practical education, will incline them to extend a sympathetic hearing to all honest proposals for enhancing the happiness and comfort of Irish families in Irish homes. The scheme I have outlined at least has this end in view. It is conceived, we trust, with a full knowledge of Irish difficulties, of Irish capacities and of Irish sentiment. We rely upon those to whom these pages are addressed to see that it plays a useful part in the upbuilding of our country.

HORACE PLUNKETT.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

SPECIAL SHORT COURSES OF INSTRUCTION IN AGRICULTURE.

May, 1901.

With a view to training young men to act as Itinerant Instructors in Agriculture and in Poultry-keeping in Ireland, and to prepare young women to act as Instructors in Poultry-keeping, the Department of Agriculture and Technical Instruction for Ireland have arranged for special courses of instruction in these subjects to be given in connection with the Royal College of Science and the Albert Institution, Glasnevin, Dublin.

The course will commence on the 1st of July next, and extend to the 10th of August, 1901.

Instruction will be given in the following subjects:—

1. Soils. Manures. Tillage Operations. Field Experiments.
2. Seeds. Grasses. Pastures.
3. Dairy Farming, including breeding, feeding, and management of milch cows. Feeding Stuffs. Calf-rearing.
4. Pig keeping.
5. Poultry-keeping.

Each of the first three subjects will occupy two weeks, and they will be taken in the order given above.

The instruction in Pig-keeping will be given on such dates as may be found most convenient.

The instruction in Poultry-keeping will be given during the second fortnight, viz., from July 15th to July 27th.

The Poultry Class may be taken in conjunction with, or independent of, the other courses of instruction.

Applicants must produce evidence of having had a thorough training in practical agriculture, a special training in technical agriculture, or a training in the sciences bearing on agriculture.

An examination will be held at the close of the Course, and such students as appear to have made satisfactory progress will, if considered necessary, receive further training at the expense of the Department, with a view to their becoming fully qualified as applicants for the post of a County Itinerant Instructor in Agriculture.

The course in Poultry-keeping is intended for young men or young women who intend to become Itinerant Instructors in Poultry-keeping in Ireland. Candidates must have had experience in Poultry-keeping, and in addition must have had a technical training in the subject.

Students will be required to give their whole time to the work of the courses and to attend all the lectures and demonstrations, and any excursions that may be arranged for the purpose of inspecting farms, farm buildings, or stock.

No fee will be charged for these courses, but all students will be required to pay their own travelling expenses, as well as board and lodging while attending the course in Dublin.

Forms of applications may be had from, and must be returned, on or before the 24th June, to

The Secretary,
Department of Agriculture and Technical
Instruction for Ireland,
Upper Merrion street,
Dublin.

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DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

UPPER MERRION STREET, DUBLIN,
7th December, 1900.

CATTLE AND HORSE BREEDING SCHEMES, 1901.

SIR,

I am directed to forward, for the information of the County Council, the accompanying copies of two Schemes which have been drawn up by the Department for encouraging improvement in the breeds of Cattle and Horses in Ireland during the coming year. I am to explain that these Schemes were framed in consultation with two Special Committees, appointed for the purpose by the Department, which were representative of the opinion of those most concerned in the improvement of Cattle and Horse Breeding in the different parts of the country, and having special knowledge and experience of the subject. Schemes dealing with the breeds of Sheep and Swine are being prepared and will follow in due course.

It will be seen that the schemes are drawn on comprehensive lines, and permit of application in accordance with local conditions. They may, moreover, be made part of any general scheme for agriculture and technical instruction, framed by a County Council under the provisions of the Agriculture and Technical Instruction (Ireland) Act, 1899.

In submitting the Schemes for the consideration of your Council, I am to point out that the Department desires to delegate, as far as possible, to the local authorities the duty of administering them; and, with this object, it proposes the formation of special Committees of the County Councils, by whom the local administration of the monies available for the Schemes, whether from the rates or from the funds of the Department, may conveniently be undertaken. The constitution of these Committees is explained in the Schemes. It would seem that a small Committee, carefully chosen, so as to be sufficiently representative without being cumbersome, and with special regard to administrative efficiency, would be better suited than a large one to discharge the work of business detail which this duty will involve. It may happen, for example, that a member of the County Council is also qualified to represent on the Committee the Rural District in which he lives and an Agricultural Society to which he may belong, and in such a case the County Council may consider it desirable to appoint one man to serve rather than three. A County Committee for Live Stock thus formed may deal with both of the present Schemes, and with the further Schemes for the improvement of Live Stock which will be issued by the Department.

The County Council should give the Committee they appoint the necessary authority for administering the sum to be applied to the improvement of Live Stock during the year in the manner explained in the Schemes.

Should your Council desire to adopt the Schemes, their first step should be to determine what proportion of the rates available for the purposes of Agriculture and Technical Instruction they intend to set aside during the coming year for the improvement of the breeds of Live Stock (including Sheep and Swine, as well as Horses and Cattle). The sum so fixed would be a principal guide to the Department in deciding the amount of grant to be allocated from its funds in aid of the County Schemes. The next step should be the formation of the County Committee for Live Stock.

If farmers and breeders are to be enabled to avail themselves of the Schemes in time for next season, it is important that these steps should be taken as early as possible. In order to include a County Council in its provisions, under these Schemes, for the coming year, the Department should know not later than 15th January next what action the County Council propose to take. It should also be furnished before that date with the names of the members of the County Committee for Live Stock, and of the Secretary to the Committee.

I am, therefore, to request that you will have the goodness to bring this matter before your Council at the earliest opportunity. If no arrangements have been made for holding a regular meeting of the Council before 15th January, the Chairman of the Council may, perhaps, deem it advisable to summon a special meeting for the purpose.

I have the honour to be,

Sir,

Your obedient Servant,

T. P. GILL,

Secretary.

To the Secretary of each County Council.

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00-37.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

SCHEME FOR ENCOURAGING IMPROVEMENT IN THE BREEDS OF CATTLE. YEAR 1901.

GENERAL REGULATIONS.

1. The sum to be provided by the Department under this Scheme for the Improvement of the Breeds of Cattle in a County will depend on the amount provided in aid of the Scheme, by local authorities or from other local sources, as well as on the special needs of the locality. Regard will also be had to the proportion which the amount of the local contribution will bear to the genuine capacity of the locality to contribute.

2. The Department will not, in the absence of special considerations, apply or approve of the application of money under this Scheme in a locality out of which aid is not given, either by local authorities or from other local sources.

3. The sum available under this Scheme, including the grant from the Department and the money provided locally, will be administered as far as possible through County Committees, subject to the approval of the Department.

4. A County Committee for the purposes of this Scheme shall be appointed by the County Council, and shall consist partly of members of the County Council and partly of other persons, who should as far as possible be engaged or interested in agriculture and representative of such Agricultural Associations as may exist in the County. Each Rural District in the County should be represented on the Committee. Such County Committee may, with the consent of the County Council, be appointed by the Committee which may have already been appointed by the County Council for the general purposes of the Agriculture and Technical Instruction (Ireland) Act, 1899.

Nothing in this clause shall prevent the County Committee appointed for this Scheme being also a Committee for some other kindred purpose in connection with the Act.

5. In the absence of any special circumstances the money available for Premiums and Prizes for Cattle may, after the expenses of administration are defrayed, be apportioned as follows:—At least 60 per cent. shall be allocated for Premiums for Bulls, and the remainder may be given in Prizes for Cows, Heifers, and Calves, special provision being included for Prizes for Dairy Cows.

For the purpose of this Scheme awards of Prizes for Cows, Heifers, and Calves shall be made at Local Shows approved by the Department.

6. The money allotted will be spent chiefly in providing Premiums for selected Bulls, but in the event of there not being a sufficient number of Premium Bulls in any County for the working

of this Scheme, the Department may provide for such County as far as funds will permit, and under certain conditions to be prescribed by the Department, in the following ways, viz.:—

(1) By assisting approved applicants by way of loans, whether individuals or associations, to buy suitable Bulls.

(2) By purchasing, in very exceptional cases, Bulls for certain districts.

7. Bulls to receive Premiums shall be selected at Spring Shows, or where such Shows do not exist, at some suitable and central situation determined by the Department, and duly advertised. The Classes under which Premiums are allotted to Bulls shall be open to Bulls from all parts.

8. A Bull which has been awarded a Premium out of the Public Fund administered by the Royal Dublin Society shall not be eligible in the same year for a Premium under this Scheme.

9. The County Committee shall decide upon the breeds of the Bulls to be selected for their County; but only Bulls entered in or eligible for entry in the Herd Books of their respective breeds, shall be selected.

10. Premiums will be given primarily to yearling Bulls; but, in the event of a sufficient number of yearling Bulls not being selected or a sufficient number of Premiums for yearling Bulls not being applied for, two-year-old Bulls may be chosen.

In the case of a yearling Bull which has received a Premium, the Premium may be continued for a second year, provided that the Department's Inspector is satisfied of the Bull's entire fitness therefor. The time and place of inspection shall be determined by the Department.

Where a Premium for a two-year-old Bull is applied for, evidence of his fruitfulness as a yearling must be forthcoming.

The ages of all Bulls and of their produce shall be calculated from the 1st January in the year in which they were calved.

11. Each Premium yearling Bull shall serve not less than twenty Cows, and each two-year-old Bull not less than forty Cows —other than those that are the property of the owner of the Bull. The County Committee may make such provision as they think necessary regarding the maximum numbers of cows to be served. Each Cow shall be the property of a farmer, the aggregate tenement valuation of whose holding or holdings does not exceed £100 per annum. The term "Farmer" is to be understood to mean a person who derives his means of living from farming.

Herds and *bona fide* agricultural labourers may obtain service for their Cows on the same terms as a farmer.

12. Premium Bulls shall be chosen by one or two locally selected Judges and the Department's Inspector; but Judges shall not act in their own County or Riding.

13. The value of a Premium will be £8 for Kerries and Dexters and £12 for other approved breeds.

14. In the allocation of Premiums to Bulls provisionally selected regard will be had as far as practicable to the requirements of each district.

15. The Department reserve the right to brand or mark Premium Bulls, and to inspect them from time to time.

16. The service fee, inclusive of all charges, for a Premium Bull, shall be 1*s*. for farmers whose tenement valuation is £20 or under,

and 2*s*. 6*d*. for farmers over £20 valuation; but on the suggestion of a County Committee the Department may approve of a modification of this provision.

17. The Premiums will be paid on the 1st September in each year or so soon thereafter as all the necessary conditions have been complied with. In the event of the Bull being unable, from any cause, to complete the prescribed number of services the Department reserve the right to withhold the premium or any part of it, or in any other way to deal specially with the case according as the circumstances may require.

18. The County Committee will supply each owner of a Premium Bull with posters, which he must undertake to distribute in the district in which the Bull is to serve. He will also be supplied with a form for the return of the names and addresses of the owners of Cows served, and with a form of Statutory Declaration, and, on the completion of the service of the required number of Cows, this Declaration being duly filled up and signed before a magistrate other than the owner, and certifying that the Cows have been served, shall be returned to the County Committee on or before 1st January in each year, after which date any Premium not applied for shall be considered as having lapsed. The service season for Premium Bulls shall close finally on 31st December.

Forms for the Declaration required by this paragraph, may be had on application to the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin.

19. The owner of a Premium Bull has the right to refuse the use of his Bull in any case where he is satisfied that the service would be prejudicial to the animal. The reasons for such a refusal must, however, be communicated to the Department and to the County Committee immediately on the refusal of the application.

20. The Department reserves the right to apply the tuberculin test, at its own expense, to any Premium Bull.

21. In all cases of dispute in matters connected with this Scheme, the decision of the Department shall be final.

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DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

SCHEME FOR ENCOURAGING IMPROVEMENT IN THE BREEDING OF CATTLE. YEAR 1901.

LOANS FOR THE PURCHASE OF BULLS.

Under Clause 6 of the Department's General Scheme for the Improvement of Cattle, it is provided that for the purchase of Bulls, loans may be made to individual farmers or to Associations of Farmers. The Department are now prepared to consider applications for loans on the following conditions:—

(1.) The Department must be satisfied that there is an insufficient number of pure-bred Bulls in the district from which the application comes.

(2.) The Society or the individual making the application must be approved by the Department.

(3.) No loan will be made save for the purchase of a Bull eligible for a premium under the Department's General Scheme for the Improvement of Cattle.

(4.) The purchase price of the Bull must be approved of by the Department.

(5.) Before the purchase is made the Bull must be passed by the Department as suitable for a premium, but such inspection will not imply any special claim to a county premium. For such a premium, the Bull must compete on equal terms with other Bulls in the county.

(6.) Should the Bull be awarded a premium by the Live Stock Committee of the county in which he is to stand, the owner or owners must conform to the regulations as set forth in the Department's General Scheme for the Improvement of Cattle.

(7.) In the case of a Society purchasing a Bull under the terms of these provisions, the members of the Society shall have a prior claim to send their cows for service.

(8.) One-third of the purchase price of the Bull must be paid by the applicant to the Department by Receivable Order, which will be issued by the Department for the purpose, before the Bull can be taken possession of by the individual or Society.

(9.) On receipt by the Department of one-third of the agreed purchase price of the Bull, the Department will pay the full amount of the purchase money to the Vendor, and the individual farmer or society, for whom the Bull has been purchased, shall enter into a Bond to repay to the Department the amount advanced by them, viz., two-thirds of the purchase money, in two equal instalments at the end of one and two years respectively, from the date of such payment by the Department, with interest at the rate of 2½ per cent. per annum. In the case of a Society, repayment must be guaranteed by the Committee of the Society. In the case of an individual, two solvent sureties, approved by the Department, in addition to the purchaser, must guarantee repayment.

(10.) The person in whose charge the Bull is placed must provide suitable accommodation for him, and enter into a Bond with the Department for the proper care of the animal.

(11.) The Bull will remain the property of the Department until all instalments or arrears of principal and interest are paid off.

(12.) The Department shall have the right to brand the Bull and to inspect him at any time, and to remove him if it is found that in the opinion of the Department he has not been properly cared for, or if the instalments of principal and interest are in arrear for more than four weeks.

(13.) Should the Bull be awarded a premium by the County Committee such premium shall not be paid to the Society or individual in possession of the Bull, but shall be credited towards the repayment of the loan.

(14.) The Bull must be insured in an approved Live Stock Insurance Office for the amount of his purchase price, and the payment of the annual premium on this insurance must be secured under conditions similar to those provided for the repayment of principal and interest. (See 9.) The policy of insurance must be lodged with the Department, together with receipts for the insurance premiums.

(15.) The Department reserve the right to refuse applications for loans without assigning any reason.

(16.) The decision of the Department in all matters relating to these loans shall be final.

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DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

SCHEME FOR ENCOURAGING IMPROVEMENT IN HORSE BREEDING. YEAR 1901.

GENERAL REGULATIONS.

1. The sum to be provided by the Department under this Scheme for the Improvement of Horse Breeding in a County will depend on the amount provided in aid of the Scheme, by Local Authorities or from other local sources, as well as on the special needs of the locality. Regard will also be had to the proportion which the amount of the local contribution will bear to the genuine capacity of the locality to contribute. The number of Horses bred in the county will also be taken into consideration.

2. The Department will not, in the absence of special considerations, apply or approve of the application of money under this Scheme in a locality out of which aid is not given either by local authorities or from other local sources.

3. This sum available under this Scheme including the grant from the Department and the money provided locally will be administered as far as possible through County Committees, subject to the approval of the Department.

4. A County Committee for the purposes of this Scheme shall be appointed by the County Council, and shall consist partly of members of the County Council and partly of other persons who should as far as possible be engaged or interested in horse breeding and representative of such Associations concerned in the promotion of horse breeding as may exist in the County. Each Rural District in the County should be represented on the Committee. Such County Committee may with the consent of the County Council be appointed by the Committee which may have already been appointed by the County Council for the general purposes of the Agriculture and Technical Instruction (Ireland) Act, 1899.

Nothing in this clause shall prevent the County Committee appointed for this Scheme being also a Committee for some other kindred purpose in connection with the Act.

5. The sum available under this Scheme for encouraging Improvement in Horse Breeding may, after the expenses of administration are defrayed, be apportioned as follows :—

(1) Ten per cent. to Prizes for Yearlings.

(2) Thirty per cent. in Premiums or Prizes to Mares between two and six years old stinted to, or with foal at foot by, a Registered Thoroughbred or Agricultural Stallion.

(3) Sixty per cent. in Nominations to Mares.

6. In the event of there not being a sufficient number of Registered Stallions in any County for the working of this Scheme,

the Department may provide for such County as far as funds will permit, and under certain conditions to be prescribed by the Department, in the following ways, viz.:—

(1) By assisting approved applicants, whether individuals or associations, to buy or lease suitable Stallions.

(2) By purchasing, in very exceptional cases, Stallions for certain districts.

(3) By giving Premiums for suitable Registered Stallions in the hands of private owners who are prepared to send such Stallions to districts to be fixed by the Department upon terms to be prescribed.

7. Thoroughbred and Agricultural Stallions shall be the only Sires subsidised by the Department, whether under the nomination, premium, or any other system adopted by the Department.

REGISTRATION OF STALLIONS.

8. The Department will publish a Register of Stallions for service under the Horse Breeding Scheme of 1901, and Owners of Stallions are invited to apply to have their horses placed on this Register.

9. The Department make it a condition in offering subsidies to thoroughbred or other Stallions in any county in Ireland, that a Stallion to be entitled to a subsidy by the nomination, or any other system, shall be registered or accepted for registration in the Department's published Register of Stallions for the year 1901.

10. The conditions attached to the Registration of Stallions for the purposes of the Scheme are as follows:—

(*a*.) Stallions to qualify for registration must be thoroughbred, and duly entered in Weatherby's Stud Book, or if not thoroughbred must be entered in the Stud Books of their respective breeds.

(*b*.) All Stallions must submit to the Inspection and Veterinary Examination required by the Department. The Department will give due notice of the arrangements made as to place and method of Inspection.

Inspection.

(1) The Inspection of Stallions for their general merits and fitness for the purposes of the Scheme shall be carried out by three Inspectors appointed by the Department. These Inspectors shall be experts in the particular breed which they are called upon to inspect, and shall be non-resident in the county for which they act. Two shall act in the first instance, and should difference of opinion arise the third Inspector shall be called in as referee.

(2) If the Stallion has been to stud, evidence must be produced as to his fruitfulness, and, where practicable, as to the character of his stock.

(3) The Inspection certificate shall be signed by two of the Inspectors.

(4) Stallions must pass inspection to qualify for Veterinary Examination.

Veterinary Examination.

(1) The Veterinary Examination shall be carried out by three qualified Veterinary Surgeons, appointed for the year only. Two of these shall be appointed by the Department, and shall

be non-resident in the counties for which they act. The third shall be appointed by the County Committee. The Veterinary Certificate must be signed by two of the Veterinary Surgeons.

(2) No Stallion shall be rejected as unsound unless suffering from one of the following hereditary diseases, viz.:—Roaring, Whistling, Ringbone, Unsound Feet, Navicular Disease, Spavin, Cataract.

(3) Any Stallion certified to be sound in his wind after his second year at Stud shall be held sound in that respect without further examination for the purpose of registration in future years, unless the Inspectors or the County Committee have satisfactory evidence to report his stock as affected by wind infirmity. In such event he shall be at once struck off the Register.

11. The Inspection and Veterinary Examination of Stallions may be dispensed with in case where evidence of suitability and soundness have been sufficiently established to satisfy the Department.

12. The Department reserve to themselves the right, without assigning any reason, or without any Inspection or Veterinary Examination, to decline to register any Stallion for the purpose of this Scheme.

13. Forms of Application for the registration of Stallions may be had from the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin.

One of these forms accurately filled in every particular and signed by the owner, or his agent, must be lodged with or sent by post to the Secretary of the Department, on or before the 7th day of January, 1901.

14. The following particulars relative to the Stallion to be registered must be stated in the form of application:—

The name and address of the owner.

The name and address of the breeder.

The name of the Stallion, his age, colour, and pedigree, with Stud-book references, as described in the form.

The County or Counties in which the Stallion will stand.

The place or places at which the Stallion will stand during the season, if possible.

The Service Fee.

If the horse is to stand at more than one place, the days and dates at each place should be stated; also the number of mares the owner is prepared, if asked, to have served by the Registered Stallion at the fee named.

Whether the Stallion will compete for a Premium at the Spring Show of Stallions, which the Royal Dublin Society propose to hold.

15. Owners of Stallions have a right to require hobbles to be used when necessary, and to refuse service to mares suffering from contagious diseases. Mares can be served only at their owner's risk.

16. Subject to the provisions of Rule 15 the owner of a Registered Stallion shall be bound to accept for Service by that Stallion such Nominated Mares, not exceeding Fifty, as are entitled to his services, provided that the owners of the mares comply with the conditions as to payment of fees.

17. A stallion which has been awarded a Premium under the Royal Dublin Society's Scheme for 1901 shall, if required, serve Fifty Nominated Mares at the nomination fee of £3 each Mare and 2*s.* 6*d.* Groom's fee.

18. Owners of Stallions making or promising to make any gift to the owner of a Nominated Mare of a portion of the Service Fee, or detected in other fraudulent practices in connection with the foregoing regulations, shall have their horses struck off the Register of the Department, and shall be debarred from obtaining any future benefit under the Department's Scheme. They shall also forfeit any claim in respect of monies due to them under this Scheme.

NOMINATION OF MARES.

19. The County Committee shall, upon a day and at a place duly advertised in the local newspapers, hold one or more Exhibitions of Mares, for the purpose of issuing Nominations. These Exhibitions may be utilised in Counties in which no Shows are held for the purpose of awarding premiums and prizes to young Stock. In counties where local Shows approved by the Department are held, awards of premiums and prizes to young stock and mares must be made at such Shows.

The ages of all Mares and of their produce shall be calculated from 1st January in the year in which they were foaled.

The conditions attached to the award of the Nominations are as follows:—

(1) The Nominations to be for Farmers' Mares, and shall be confined to Stallions on the Register of the Department for the year 1901.

(2) The Mares to receive Nominations shall be selected by Judges named by the Department, they must be passed free of any hereditary disease by the Veterinary Surgeon appointed for that purpose by the Department. Each mare must be the property of a Farmer, the tenement valuation in aggregate of whose holding or holdings, wherever situated, does not exceed £150 a year, except in the following Counties, viz.:—Dublin, Kildare, Louth, Meath, Westmeath, Roscommon, Clare, Cork East, Limerick, and Tipperary, where the tenement valuation is fixed at £200. Two-thirds of the Nominations shall be for Mares, the property of Farmers, the tenement valuation of whose holdings does not exceed £50 a year. The remaining third shall be for Mares the property of Farmers, the tenement valuation of whose holdings is between £50 and £150 (or £200 in the Counties just named). The term "Farmer" is to be understood to mean a person who derives his means of living from farming.

(3) A Farmer whose holding extends into more than one County may apply for a Nomination in any one of the Counties in which he holds land, provided his aggregate valuation does not exceed the limit fixed for the County, or division of the County, in which he proposes to compete. No Farmer shall receive more than one Nomination, unless the number of Mares exhibited be insufficient for the granting of the full number of Nominations or Premiums allotted to the County, when the County Committee may grant a second Nomination.

(4) The County Committee may, with the approval of the Department, refuse a Nomination for any Mare without assigning any reason therefor.

(5) A Farmer receiving a Nomination may select for his Mare any one of the Registered Stallions in Ireland whose Service List is not already full. He must make his selection, and send the name of the Stallion to the Secretary of the County Committee, within ten days after having received his Nomination Certificate. A Farmer failing to select a Stallion within the 10-day limit shall forfeit said Nomination, which shall lapse to the County Committee, who may issue another Nomination to any Farmer's Mare that has passed the Inspection and Veterinary Examination, and is on the Reserve List of the County Committee.

(6) For a Nomination to a Registered Stallion the sum of £3 shall be paid to the Stallion owner on the production of the first Service Ticket duly signed and attested as hereinafter provided (see (10)), and the balance, if any, by the Owner of the Mare. In addition, the Farmer shall pay a Groom's fee of 2*s.* 6*d.* for each Mare.

(7) Any portion of the Service Fee, payable by the Farmer, shall be paid to the Stallion Owner at the time of first Service, or at such other time as may be agreed upon between the Stallion Owner and the Farmer.

(8) The Nomination is not transferable, and is available only for the selected Mare, except in the case of the death or illness of the Mare, in which case the County Committee may, with the approval of the Department, issue a new one. Cases of illness must be certified by a qualified Veterinary Surgeon employed by the Department.

(9) The Service Season shall be reckoned to commence on the 1st of March and terminate on the 31st of July. The Department will not be liable for the payment on such Nominatious as may be taken out by Farmers who may, through reglect or otherwise, fail to send their Mares for Service.

(10) Not later than the first Monday in October, 1901, Owners of Registered Stallions shall forward to the County Committee the First Service Tickets for the Services effected by their Horses, accompanied by a Statuory Declaration to the effect that the conditions of Service have been duly complied with. The Department will thereupon, or as soon as satisfied as to the fulfilment of the conditions of the Scheme, make payment to the County Committee of the amounts payable under the Scheme to the various Owners. Forms for the Declaration required by this paragraph may be had on application to the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin. No payment will be made unless the first Service Ticket, duly filled, is returned to the Department by the County Committee.

(11) Owners of Mares accepting or agreeing to accept from the Stallion Owner portion of the Service Fee, changing nominations, substituting Mares, or detected in other fraudulent practices in connection with these Regulations, shall be debarred from obtaining any future benefit under the Department's Scheme.

20. In all cases of dispute in matters connected with this Scheme the decision of the Denartment shall be final.

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DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

SCHEME FOR ENCOURAGING IMPROVEMENT IN HORSE BREEDING. YEAR 1901.

Loans for the Purchase of Stallions.

Under Clause 6 of the Department's General Scheme for the Improvement of Horses, it is provided that, for the purchase of Stallions, loans may be made to individual farmers or to Associations of Farmers. The Department are now prepared to consider applications for loans on the following conditions:—

(1.) The Department must be satisfied that there is an insufficient number of registered Stallions in the district from which the application comes.

(2.) The Society or individual applying for a loan must be approved by the Department.

(3.) No loan will be made save for a Stallion on the Register of the Department, or eligible for entry therein.

(4.) The purchase price must be approved of by the Department.

(5.) Before the purchase is made the Stallion, if not on the Department's Register, must be passed by the Department as eligible for registration, but such registration will not imply any special claim to a premium. To obtain a premium the owner must compete on equal terms with other registered Stallions in Ireland.

(6.) The owner or owners of a Stallion purchased by a loan from the Department must conform to the regulations as set forth in the Department's General Scheme for the Improvement of Horses.

(7.) In the case of a Society purchasing a Stallion under these provisions, the members of the Society shall have a prior claim to send their mares for service, provided such mares have received nominations from the Live Stock Committee of the County in which the mares are located.

(8.) One-third of the purchase price of the Stallion must be paid by the applicant to the Department by Receivable Order, which will be issued by the Department for the purpose, before the Stallion can be taken possession of by the individual or Society.

(9.) On receipt by the Department of one-third of the agreed on purchase price of the Stallion, the Department will pay the full amount of the purchase money to the Vendor, and the individual farmer or Society, for whom the Stallion has been purchased, shall enter into a Bond to repay to the Department the amount advanced by them, viz.:—two-thirds of the purchase money, in five equal annual instalments, at the end of one, two, three, four, and five years respectively from the date of such payment by the Department, with interest at the rate of 2½ per cent. per annum. In the case of a Society repayment must be guaranteed by the Committee of the Society. In the case of an individual four solvent sureties, approved by the Department, in addition to the purchaser, must guarantee repayment.

(10.) The person in whose charge the Stallion is placed must provide suitable accommodation for him, and enter into a Bond with the Department for the proper care of the animal.

(11.) The Stallion will remain the property of the Department until all instalments or arrears of principal and interest are paid off.

(12.) The Department shall have the right to inspect the Stallion at any time, and to remove him at any time, if it is found that in the opinion of the Department he is not being properly cared for, or if the instalments of principal and interest are in arrear for more than four weeks.

(13.) Should the Stallion be awarded a premium such premium shall not be paid to the Society or individual in possession of the Stallion, but shall be credited towards the repayment of the loan.

(14.) The Stallion must be insured in an approved Live Stock Insurance Office for the amount of his purchase price, and the payment of the annual premiums on this insurance must be secured under conditions similar to those provided for the repayment of principal and interest. (See 9.) The policy of insurance must be lodged with the Department together with receipts for the insurance premiums.

(15.) The Department reserve the right to refuse applications for loans without assigning any reason.

(16.) The decision of the Department in all matters relating to these loans shall be final.

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DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

SCHEME FOR ENCOURAGING IMPROVEMENT IN THE BREEDS OF SHEEP AND SWINE. YEAR 1901.

General Regulations.

1. The sum to be provided by the Department under this Scheme for the Improvement of the Breeds of Sheep and Swine in a County will depend on the amount provided in aid of the Scheme, by local authorities, or from other local sources, as well as on the special needs of the locality. Regard will also be had to the proportion which the amount of the local contribution will bear to the genuine capacity of the locality to contribute.

2. The Department will not, in the absence of special considerations, apply or approve of the application of money under this Scheme in a locality out of which aid is not given, either by local authorities or from other local sources.

3. The sum available under this Scheme, including the grant from the Department and the money provided locally, will be administered as far as possible through the County Committee for Live Stock, subject to the approval of the Department. The constitution of this Committee is explained in Clause 4 of the Schemes for the Improvement of Cattle and Horses.

4. In all cases of dispute in matters connected with this Scheme, the decision of the Department shall be final.

SHEEP.

5. The money allotted for improvement in Sheep breeding shall be spent chiefly in providing Premiums for selected Rams. The remainder may be spent in Prizes for Sheep at Local Shows.

6. Rams to receive Premiums shall be selected at Autumn Shows, at Ram Sales, or at some suitable and central situation duly advertised by the County Live Stock Committee. In all cases the Department must first approve of the place and time at which it is proposed to make the selection. At Shows, the Classes under which Premiums are allotted to Rams shall be open to Rams from all parts. The entry fee shall not exceed 2*s.* 6*d.* for each Shearling Ram, and 2*s.* 6*d.* for each pen of ram lambs not exceeding three.

7. The County Committee shall decide upon the breeds of Rams to be selected for their County; but only Rams entered in or eligible for entry in the Flock Books of their respective breeds, shall be selected.

8. Premiums will be awarded only to Shearling and Ram Lambs.

9. Each Premium Shearling Ram shall serve not less than fifty Ewes, and each Ram Lamb not less than twenty Ewes. At least half this number shall be the property of a farmer or farmers other than the owner of the Premium Ram. The County Committee may make such provision as they think necessary regarding the maximum number of Ewes to be served. Each Ewe shall be the property of a farmer, the aggregate tenement valuation of whose holding or holdings does not exceed £50 per annum. The term "Farmer" is to be understood to mean a person who derives his means of living from farming.

Herds and *bona fide* agricultural labourers may obtain service for their Ewes on the same terms as a farmer.

10. Premium Rams shall be chosen by one or two locally selected Judges and the Department's Inspector; but Judges shall not act in their own County or Riding.

11. The value of a Premium will be £3 for Shearlings and £2 for Ram Lambs.

12. In the allocation of Premiums to Rams provisionally selected regard will be had as far as practicable to the requirements of each district.

13. No person can receive a premium for a Ram unless he has had his flock dipped, at least twice in summer, during dry weather, in some approved sheep dip. The interval between the first and second dippings must not exceed fourteen days.

14. The Department reserve the right to brand or mark Premium Rams, and to inspect them from time to time.

15. The service fee, inclusive of all charges, for a Premium Ram, shall not exceed 1*s.* per Ewe.

16. No person shall send a Ewe or Ewes for service unless his whole flock has been dipped, at least twice in summer, during dry weather, in some approved sheep dip. The interval between the first and second dippings must not exceed fourteen days.

17. The Premiums will be paid on the 1st February in each year or so soon thereafter as all the necessary conditions have been complied with. In the event of the Ram being unable, from any cause, to complete the prescribed number of services, the Department reserve the right to withhold the premium or any part of it, or in any other way to deal specially with the case according as the circumstances may require.

18. The County Committee will supply each owner of a Premium Ram with posters, which he must undertake to distribute in his dis-

trict. He will also be supplied with a form for the return of the names and addresses of the owners of Ewes which have been served, and with a form of Statutory Declaration, and, on the completion of the service of the required number of Ewes, this Declaration being duly filled up and signed before a magistrate other than the owner, and certifying that the Ewes have been served, shall be returned to the County Committee on or before 1st March, 1902, after which date any Premium not applied for shall be considered as having lapsed.

Forms for the Declaration required by this paragraph, may be had on application to the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin.

19. The owner of a Premium Ram has the right to refuse the use of his Ram in any case where he is satisfied that the service would be prejudicial to the animal. The reasons for such a refusal must, however, be communicated to the Department and to the County Committee immediately on the refusal of the application.

SWINE.

20. The money allotted for improving the breeds of Swine shall be spent chiefly in providing Premiums for selected Boars. The remainder may be spent in Prizes for Swine at Local Shows.

21. Boars to receive Premiums shall, as far as possible, be selected at Shows, or, where Shows do not exist, at some suitable and central situation duly advertised by the County Live Stock Committee. In all cases the Department must first approve of the place and time at which it is proposed to make the selection. The Classes under which Premiums are allotted to Boars shall be open to Boars from all parts. The entry fee for Premiums shall not exceed 2*s.* 6*d.* per Boar.

22. A Boar which has been awarded a Premium out of the Funds administered by any other body, shall not be eligible in the same year for a Premium under this Scheme.

23. The County Committee shall decide upon the breeds of the Boars to be selected for their County; but only Boars entered in or eligible for entry in the Register of Pigs of the Royal Dublin Society shall be selected.

24. Each Premium Boar shall serve not less than thirty Sows, and the County Committee may make such provision as they think necessary regarding the maximum number of Sows to be served. Each Sow shall be the property of a farmer, the aggregate tenement valuation of whose holding or holdings does not exceed £50 per annum. The term "Farmer" is to be understood to mean a person who derives his means of living from farming.

Herds, *bona fide* agricultural labours and artisans, may obtain service for their Sows on the same terms as a farmer.

25. Premium Boars shall be chosen by one or two locally selected Judges and the Department's Inspector; but Judges shall not act in their own County or Riding.

26. The value of a Premium shall be £5, tenable for one year.

27. Qualified Boars belonging to the South of Ireland Provision Merchants' Protection Association, or to Associations of Farmers, shall be eligible for Premiums.

28. In the allocation of Premiums to Boars provisionally selected regard will be had, as far as practicable, to the requirements of each district.

29. The Department reserve the right to brand or mark Premium Boars, and to inspect them from time to time.

30. The service fee, inclusive of all charges, for a Premium Boar shall not exceed 1*s*. for each Sow.

31. The Premiums will be paid on the 1st February in each year or so soon thereafter as all the necessary conditions have been complied with. In the event of the Boar being unable, from any cause, to complete the prescribed number of services, the Department reserve the right to withhold the Premium or any part of it, or in any other way to deal specially with the case according as the circumstances may require.

32. The County Committee will supply each owner of a Premium Boar with posters, which he must undertake to distribute in the district in which the Boar is to serve. He will also be supplied with a form for the return of the names and addresses of the owners of Sows served, and with a form of Statutory Declaration, and, on the completion of the service of the required number of Sows, this Declaration being duly filled up and signed before a magistrate other than the owner, and certifying that the Sows have been served, shall be returned to the County Committee on or before 31st March in each year, after which date any Premium not applied for shall be considered as having lapsed.

Forms for the Declaration required by this paragraph may be had on application to the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin.

33. The owner of a Premium Boar has the right to refuse the use of his Boar in any case where he is satisfied that the service would be prejudicial to the animal. The reasons for such a refusal must, however, be communicated to the Department and to the County Committee immediately on the refusal of the application.

34. All pigs receiving a prize or commendation to be of such conformation as the Judge or Judges and the Department's Inspector consider suitable for the improvement of swine in Ireland.

(1.) *White Pigs* to be all white.

(2.) *Black Pigs* to be either all black, or they may have the white markings on the face, tail, or feet, as in the Berkshire breed.

(3.) *Brown Pigs* to be all brown or tawny, as in the Tamworth breed.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

POTATO CULTIVATION.

The Department of Agriculture and Technical Instruction for Ireland have had under consideration the question of supplying information to farmers regarding the best methods of improving the yield and quality of the potato crop. With this object in view, an inquiry has been made as to the suitability for Ireland of a large number of varieties of potatoes not hitherto widely distributed in this country.

As the result of this inquiry, a large amount of information has been obtained regarding the quality, as well as the cropping and disease-resisting power of about 130 varieties. This information is not of a character to justify the Department in recommending farmers to grow any one of the newer kinds to the exclusion of those varieties now in general use. But, nevertheless, there are a number of the newer varieties well worthy of trial, and in the Department's general scheme of experiments for 1901 (copies of which may be had on application to the Secretary of the Department), provision has been made for a few carefully conducted trials of these varieties. While the Department are not prepared to recommend any one of them as a main crop, they are of opinion that three of the varieties possess merits which warrant a more extended trial than is possible under the general scheme of experiments. The three varieties referred to are: "Black Skerries," "Reliance," and "Champion II." The Department have, therefore, decided to invite the co-operation of farmers from every county in Ireland to assist in making a thorough test of these three, and it appears that this assistance can best be rendered through local agricultural societies, wherever such bodies exist. The Department have purchased a quantity of seed potatoes of each of the above-mentioned varieties, and are prepared to distribute samples at cost price (as below) to those farmers who may take part in the experiments. The conditions attached to this special experiment are as follows:—

1. As the Department cannot in such a large test as is here contemplated undertake to deal directly with individual farmers, each association desiring to take part in the work must name some person who will act as a local secretary to correspond with the Department.

2. The local secretary must receive and submit to the Department the names and addresses of farmers who wish to take advantage of this offer.

3. The money in payment for the seed must be transmitted to the Department by the local secretary along with the applications.

4. The cost of the potatoes will be as follows:

Black Skerries, ...	6*s.* 0*d.*	per cwt.
Reliance, ...	7*s.* 0*d.*	do.
Champion II., ...	9*s.* 0*d.*	do.

5. Each applicant will be supplied with not more than 1 cwt. of any variety, and he must undertake to give the potatoes a two years' trial.

6. Each experimenter must undertake to supply the Department, through the local secretary, at the end of each season, with a report on the yield, quality, and disease-resisting capacity of each kind, and a comparison of the same properties in respect of the variety or varieties now grown in his district.

7. Each experimenter must also undertake to sell, if asked, to one of his neighbours in the following season at least 1 cwt. of the produce of any of the three varieties which he may have grown, at a price not exceeding that paid by him for the original seed.

8. In the event of there being a larger number of applications than the Department can deal with, such a selection will be made as will secure that the experiments (and consequently the results) will be representative of different localities throughout Ireland.

9. Applications must reach the Department on or before the 31st January, 1901.

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DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

FIELD TRIALS WITH SEEDS AND MANURES.

The Department of Agriculture and Technical Instruction have had under consideration the question of collecting and distributing information on the best kinds of farm seeds and manures for Ireland.

The method of collecting and distributing information by means of carefully conducted experiments, in which the land is accurately measured and the manures and crops carefully weighed and analysed, is absolutely necessary in order that such information may be correct. But it appears to the Department that in addition to such field experiments, carried out under the supervision of an expert, there is another method by which information on improved cultivation may be collected in Ireland.

In December a leaflet was issued in which the Department invited the co-operation of farmers in making an extensive test with three varieties of potatoes. Over 1,000 farmers have responded to the Department's invitation. Thus encouraged, the Department now proposes to apply the same method to crops other than potatoes, and to inculde in the test the use of manures as well as of seeds. Accordingly the Department again invites the assistance of farmers in carrying out the experiments specified below.

It must be distinctly understood that the object in making these tests is entirely educational, and aims at obtaining the opinion of intelligent farmers in all parts of Ireland on the suitability of the seeds and manures selected for trial, and whether they may be recommended for general use. In no sense must they be regarded as a means of obtaining cheap seeds or manures. They are to be regarded rather as a means by which practical farmers seeking information may, through combined action, educate themselves and at the same time assist the Department in its investigations. To avoid all possibility of misunderstanding on this point, only a limited quantity of seeds and manures will be supplied to any one person, and then only on the clear understanding that the conditions attached to the test are strictly adhered to.

A summarised report of the results will in due course be published in the form of leaflets. The origin and pedigree of the seeds, and the composition and nature iof the manures, will be explained, and the proportions of the different ingredients of the latter made known.

The kinds, quantities, and prices of the seeds and manures supplied to each individual will be as follows:—

(1.) SEEDS.

	NAME.	Quantity.	Price per bag of 4 stones.	
			s.	d.
OATS	1 Abundance,	4 stones	5	0
	2 Tartar King.	4 ,,	6	0
	3 Waverley,	4 ,,	10	0
	4 Pioneer (Black),	4 ,,	10	0
	5 Goldfinder,	4 ,,	11	0
FLAX	Pernau Crown,	15½ quarts,	10s. per 13 quarts.	
	Riga Child Dutch,	15½ ,,		

(2.) MANURES.

	CROP.	Quantity.	Price per bag of 2 cwt.
1	For Oats and Barley,	2 cwt.	10 0
2	„ Meadow Hay,	„	11 6
3	„ Potatoes,	„	12 6
4	„ Swedes,	„	9 0
			Price per bag of 1 cwt.
5	„ Flax (*a*) Mixture,	1 cwt.	4 0
„	„ (*b*) „	„	4 0
„	„ (*c*) „	„	4 0

The following are the conditions which attach to the experiments:—

(1.) As the Department cannot, in such a large test as is here contemplated, undertake to deal directly with individuals, it has been decided to confine these tests to the Agricultural Committees of County Councils and to associations or groups of farmers.

(2.) At least ten farmers in each district must take part in the test before any application will be entertained by the Department.

(3.) The secretary of the County Council Committee or of each association or group of farmers must undertake to conduct all correspondence with the Department connected with these experiments, and to furnish the names and addresses of those who wish to take part in these experiments; to collect and transmit the price of the seeds and manures; to arrange for their distribution, and to furnish such information as may be required from time to time regarding the test.

(4.) No individual farmer will be supplied with either more or less of the seeds or manures than the quantity specified in foregoing list for one person, but any individual may apply for one or more of the kinds of seeds and manures in the list.

(5.) The seeds and manures will be supplied by the Department at cost price, and carriage paid to the nearest railway station, but not less than two tons of manure will be sent to any station.

(6.) The oats must be sown alongside of the variety usually grown in the district, and must be given a two years' trial.

(7.) Each of the varieties of flax seed and the variety usually grown in the district must be sown in plots side by side in the same field.

(8.) The manure supplied by the Department must be applied to a plot surrounded by a border at least five yards wide, upon which no artificial manure is used this season.

(9.) The manures must be applied to the several crops for which they have been compounded, and on the area and at the time specified.

(10.) Any individual farmer desirous of testing the flax manures must apply for 1 cwt. of each of the three varieties designated *a*, *b* and *c* respectively. Each bag must be sown on a separate plot, and the three plots must be side by side in the same field and not on any portion of a field set aside for a trial of flax seed.

(11.) Applications, which are to be addressed to the Secretary, at Upper Merrion-street, Dublin, must in all cases be received by the Department on or before March 1st, and must be accompanied by a remittance (cheque, bank draft, or post office order) made payable to the Accountant, to cover the cost of the seeds and manures ordered.

(12.) The quantity requisitioned cannot either be increased or reduced after the application has been received by the Department.

(13.) On no consideration whatever can these conditions be modified or departed from.

(14.) In purchasing the seeds and manures to be used in these tests, every precaution will be taken to secure the best quality, but the Department will undertake no responsibility for the crop.

8th February, 1901.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

SEED TESTING STATION FOR IRELAND,

The Department of Agriculture and Technical Instruction have had under consideration the question of providing a Seed Testing Station for Ireland. There is every reason to believe that one cause of the partial failure of crops is due to the use of inferior seeds, particularly in the case of the smaller grass and clover seeds. Frequent reports have been received from various parts of Ireland pointing out the prevalence of, and injury caused by weeds in pasture and arable fields. There can be little doubt that many weeds are introduced along with the seed sown, especially in the case of grass and clover seeds, among which weed seeds can often be recognized only by an expert. Hitherto Irish farmers have not had an opportunity of obtaining, at a small cost, information enabling them to guard against the purchase of seed which is impure or otherwise defective.

In consideration of these facts, the Department have resolved to create for the use of Ireland a Seed Testing Station, for the proper working of which the Department will be directly responsible.

The points to be looked for in good seed are—(*a*) Purity; (*b*) Percentage of Germination; (*c*) True Value; (*d*) Germinating Energy; (*e*) Pedigree.

(*a*.) PURITY.

By pure seed is meant, that the seeds composing the sample are all of one kind—and that there is a complete absence of sand and other foreign substances. The seed must also be genuine, *i.e.* true to name. Absolutely pure seed is not looked for; but, owing to improved machinery for cleaning, there is now no difficulty in obtaining seed which may, for all practical purposes, be considered as pure, and many firms are prepared to guarantee a very high percentage of purity. Unfortunately, many farmers are content to use impure seed, and this system is responsible, not only for diminished yield, but also for the spread of obnoxious weeds, the exclusion of which would increase yield of crop, save much labour, and prevent the unsightly appearance which many fields present in Summer. The Department are informed that farmers occasionally make use of the sweepings of hay-lofts for seeding, a practice which cannot be too strongly condemned. Such a method is bound to result in enormous loss.

Apart from the presence of sand and other foreign substances impurities may be divided into two classes—(1) seeds of more or less value to the buyer, but not of the kind asked for, and (2) seeds of plants useless or distinctly injurious. Accompanying the statement of the percentage of impurity furnished by the Department, an account will be given of the character of the impurity.

(*b.*) PERCENTAGE OF GERMINATION.

By this is meant the number of seeds in each hundred which sprout within a given time, taken from a sample of the true seed after removal of its impurities.

(*c.*) TRUE VALUE.

Without taking into account the percentage of purity, it is obvious that the percentage of germination does not give a complete indication of the worth of the seed. Accordingly, to present the result of the examination of the sample in a concise form, it is usual to multiply the percentage of purity by the percentage of germination, and divide by 100. The resulting figure indicates the "true value" of the seed, taking perfect seed as 100.

(*d.*) GERMINATING ENERGY.

A sample of seed may possess a high percentage of purity and of germination, *i.e.*, its so-called true value may be high, and yet the quality may be inferior, as shown by the fact that sprouting is extremely slow, or irregular, or that the young plants are so weak as to prevent the sample from being regarded as satisfactory. In addition to pure seed, and seed possessing a high percentage of germination, the farmer requires seed that will sprout uniformly and vigorously. If, owing to the seed being old, badly filled, or carelessly stored, the young plants are weak and die off, a high percentage of germination gives an incorrect idea of the value of the seed to the farmer.

(*e.*) PEDIGREE.

By careful selection, by cultivation on a special class of soil, or propagation under a change of climate, one botanical species may give rise to several agricultural varieties. Thus, many varieties of the swede become more or less fixed in type, due to careful selection and cultivation. When the characteristics of such varieties are fixed, the seed may be said to have a pedigree. It must be clearly understood that the pedigree of seeds cannot be determined in a germinating test. The point is, however, one of primary importance, and can only be decided by field experiments accompanied by an investigation into the origin of the seed.

GUARANTEE.

In purchasing seeds farmers will be well advised to require from seedsmen a guarantee of purity, and percentage of germination. There are now several firms who are prepared to give a resonable warranty on the understanding that no unfair advantage will be taken of the certificate. The desire of the Department is to strengthen the hands of those seedsmen who have done and are still doing their best to keep up a high standard of excellence and to prevent the introduction into Ireland of inferior and worthless seeds.

The Department feel sure that in this matter they will receive the hearty co-operation of both seedsmen and farmers. Suitable order forms similar to that on page 4, which farmers are recommended to use when buying seed can be obtained from the Department. The grass and clover seeds named therein are those which may be used with profit.

SAMPLING.

On taking a sample to be sent to the Department for analysis, farmers must be very careful to secure a fair sample of the bulk of the seed bought, and they should make the selection in the presence of witnesses. In selecting seed from a bag, a sample must not be taken from the top alone, but also from the middle and from near the bottom. If the seed bought is delivered in more than one bag, samples must be taken from each. All the samples should then be well mixed together, and a quantity be taken from the mixture and enclosed in a suitable envelope and addressed to the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin. If sent by letter post, the postage of the sample need not be paid; but, if sent by parcels post, it must be paid. If desired, any individual farmer or body of farmers can obtain from the Department suitable envelopes for the purpose. All communications and packages bearing on the subject of seed examination should have clearly indicated on the outside of the cover the words, "Seed Testing Division."

REPORTS AND FEES.

As the testing of some samples of seed requires two or three weeks for its completion, the Department will send, as soon as possible—generally within a week—an interim report pending a complete statement of results. Farmers should purchase all grass and clover seeds *separately*, and *by weight*. Analysis and report on samples of mixed grass and clover seeds can only be undertaken at considerable expense to the sender. The following are the charges:—

—	For Farmers.	For Seedsmen.
	s. d.	*s. d.*
Report on Purity,	0 6	1 6
Report on Purity and Germination,	1 0	3 0
Report on Purity, Germanition, and Germinating Energy,	1 6	4 6
Report on a Mixture of Seeds,	2 6	7 6

The fee must accompany each sample, otherwise no notice can be taken of the seed sent for report. Reports on samples sent by farmers and seedsmen, will be made only on the condition that such reports are for the individual use of the sender. A report must not be used as a trade advertisement. The term "seedsman" will include any person engaged, no matter on how small a scale, in the wholesale or retail trade in agricultural seeds.

IDENTIFICATION OF PLANTS AND PLANT DISEASES.

In order to assist farmers in acquiring an accurate knowledge of the grasses, weeds, and diseases of plants, the Department are prepared to furnish, free of charge, a brief report on specimens submitted for examination. The specimens should be as fresh as possible, and addressed to the Secretary, Department of Agriculture and Technical Instruction for Ireland, Upper Merrion-street, Dublin. The samples must be carefully packed, and the postage prepaid.

SPECIMEN OF ORDER FORM.

To ____________________ From ____________________

____________________ ____________________

____________________ ____________________

Please supply me with the kinds and quantities of seeds specified below. Delivery will only be accepted if this form is returned containing a statement of the percentage of purity and of germination of the seeds ordered. The purchase is made subject to an Expert's Report showing that the seeds conform to your guarantee.

Lbs.	Name of Seed.	Percentage of	
		Purity.	Germination.
	Italian Rye Grass,		
	Perennial Rye Grass,		
	Timothy,		
	Cocksfoot,		
	Meadow Foxtail,		
	Meadow Fescue,		
	Red Clover or Cow Grass,		
	White Clover,		
	Alsike Clover,		
	Trefoil,		
	Turnips,		
	Swede,		
	Cabbage,		
	Mangel Wurzel,		
	Flax,		

Signature, ____________________

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

MERRION-STREET, DUBLIN,
December, 1900.

PIONEER LECTURES.

SIR,

The Department of Agriculture and Technical Instruction have arranged for a series of Pioneer Lectures, on subjects connected with Agriculture and Technical Instruction, to be delivered during the winter and spring at centres which may be settled by them in communication with local authorities, or other local bodies, who may have taken steps to avail themselves of the provisions of the Agriculture and Technical Instruction (Ireland) Act, 1899.

The object of these Lectures is primarily to illustrate the purpose of this Act in the domain of technical instruction as related to the agricultural and industrial conditions of the country.

It must necessarily take some time for the provisions of a complicated and extensive Act, which, moreover, is quite novel, so far as Ireland is concerned, to be fully understood by the country. The Department hope that these Lectures will help, to some extent, towards the formation of correct notions on at least one branch of its operations—that which concerns Practical Instruction.

The Department have already heen in communication with the local authorities upon various features of the Act; and considerable progress has in some places been made towards the formation of schemes of Practical Instruction, including the adaptation and coordination, for the purposes of such schemes, of existing schools which are willing to embrace a due proportion of Science, Manual Training, and Art in their curriculum. But work of this kind is, in its nature, slow; and progress must be impeded in Ireland for a time through the special difficulty of the scarcity of persons properly qualified to teach or give expert advice in the requisite subjects. This is true more particularly in regard to technical instruction and advice related to agriculture. Pending a supply of qualified teachers and experts, whom the Department are taking steps to train, it is hoped that these Lectures, especially on the agricultural side, will, as a temporary provision, help to disseminate information of value and interest.

The Department will, for the present, offer these Lectures free in approved localities; but the local Committee will be expected to provide the hall or lecture-room, and meet the local expenses of advertising, &c. A Syllabus of the Lectures and a full statement as to the method of arranging for them, and the conditions under which they will be given, are enclosed with this letter. The Board of National Education kindly permit the Department to state that the model schools and other school-houses under the Board may, subject to the consent of the managers, be utilised out of school-hours for the purposes of these Lectures.

In rural districts the co-operation of agricultural societies should be sought, and in towns the Committees should, wherever possible, consult the trade organisations and institutes, with a view to securing audiences of the classes for whose benefit the Lectures are chiefly intended.

Committees who wish to avail themselves of these Lectures should, for the reasons explained in Paragraph III. of the accompanying conditions, apply to the Department as early as possible.

I have the honour to be,
Sir,
Your obedient servant,
T. P. GILL.

To the Secretary of the Body named in the address.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

SCHEME OF PIONEER LECTURES, 1900–1901.

I.

In order to illustrate the need and use of Scientific Instruction in Agriculture and Industries, and to explain to Local Authorities and the public generally, and especially to the working classes, the manner in which the Department can aid in supplying this need, it has been decided to institute a series of Lectures (1) on Agricultural, (2) on Industrial subjects, which can be delivered in various rural and urban localities in Ireland during the winter and spring.

A Syllabus of each class of these lectures as at present arranged is presented herewith.

II.

It is open to any Local Authority, or its Technical Instruction Committee, or other public body, to apply to the Department to have one or more of the lectures of either the Agricultural and Veterinary or of the Technical Instruction series delivered in their locality.

Where a Local Authority or its Technical Instruction Committee propose to act, the lectures will be given by preference under their auspices; but should the Local Authority not find it convenient in any place to undertake the local duties in connection with these lectures, arrangements may be made through a Chamber of Commerce, Trades or Industrial Society, Workmen's Club, or Agricultural Society. The Committee of the Local Authority or other body applying should indicate the lectures they consider most desirable to have delivered in their locality, and the Department will endeavour to meet their wishes as far as the general arrangements of the scheme will permit.

III.

The Department cannot expect immediately to supply the needs of all the localities which may require agricultural or industrial lectures, but when applications have been received, the localities will be so grouped as to enable as many as possible to be dealt with in the course of the next few months. In order to facilitate these arrangements it is requested that the *earliest possible application may be made.*

IV.

The Department will provide the lectures free, but the Local Authority or Committee is expected to defray the necessary local expenses, such as the hire of a hall, advertising, &c. When a lecture is to be illustrated by lantern it should be stated in making application whether the Local Committee is in a position to provide the lantern, the necessary gas in cylinders or otherwise, and the services of an assistant who understands lantern-work. Where facilities for the provision of these necessaries do not exist the Department will provide them.

V.

The Department recommend that in rural districts there should be no charge for admission to the lectures. In towns it is generally advisable that some charge for admission should be made, but it should be as nearly nominal as possible. Should the local committee desire to reserve a certain number of seats and make a higher charge for them, with the object of defraying local expenses, these seats should be so arranged that they do not extend across the hall and thus make all the front seats reserved. They should not, moreover, take up more than about a fourth of the total accommodation. With these suggestions the actual arrangements in connection with the lecture-hall are left to the discretion of the Local Committee.

VI.

Local Committees formed for the purpose of arranging for these lectures and doing other work under the Agricultural and Technical Instruction Act should, as far as possible, be representative of all classes of the community, and the same principle should be borne in mind in selecting chairmen for a series of lectures. Each advertisement or placard issued in connection with any lecture should, if possible, give the dates and titles of all the lectures of the course as decided on for that particular locality, together with the names of the respective chairmen selected to preside at them.

VII.

All public announcements of the lectures must be made separately, and not in combination with any other announcement. Copies of all placards and advertisements should be sent to the Department, together with a marked copy of any newspaper in which a report may have appeared. The Local Committee should arrange, as far as possible, for good reports of the lectures in the local Press, as the benefits of the Scheme will thus, in some degree, reach many who may have been unable to attend. Accurate records of the attendance at each lecture should be furnished to the Department

VIII.

It is suggested to Local Authorities and Committees that before the beginning of the course the personal influence and exertions of their members should be utilized to secure a good attendance. For this purpose visits should be made to factories, clubs, and societies, and every means used to disseminate information about the lectures.

I.—SYLLABUS OF AGRICULTURAL LECTURES.

(a). *Agriculture and Rural Industries.*

1.—Field Experiments and their Lessons.

Object of Experiments. How to conduct Field Experiments. Lessons learned from recent experiments on the manuring of barley, oats, swede, potatoes, grass. Result of experiments with the new varieties of seeds.

2.—Profitable Use of Manures.

Farmyard manure. Conditions under which the best quality is produced. Comparative merits of the common methods of using artificial manures.

Different classes of artificial manures. Methods of mixing. Mixtures suitable for different crops. How to ascertain the money value of a ton of mixed artificial manure.

3.—Potato Crop.

Preparation of the land. Ridging and lazy-bed system. Application of manures. Seed. Change of seed. Varieties most suitable where disease is prevalent. New varieties, and how to obtain samples on trial. Cutting seed. Treatment of crops during growth. Prevention of disease by spraying. Mixtures and machine best suited for the work. Cost of spraying. Harvesting the crop. Storing.

4.—Feeding and Management of Milch Cows.

Breeding. Importance of good bulls. Selection of cows. Treatment of cows before and after calving. The most suitable kind of cowhouse. Feeding. Best kinds of food. How the quantity and quality of milk is influenced by the kind of food, age of the cow, breed of the cow, and management. Common diseases amongst cows —abortion and consumption.

5.—Laying down and Management of Grass Land.

Preparation of land to be laid out in grass. Kinds and quantities of seeds to sow for grazing and for mowing. Difference between good and bad seed. How to get seed tested. Methods of sowing seed. Effects of grazing and mowing the field the first year. Thistles and other weeds, and how to get rid of them. Manure for grass land. Result of experiments in the manuring of meadows.

6.—Profitable Poultry Meeping.

Best kind of house. Best breeds for laying and for fattening. Advantage of good breeds. Most suitable food for poultry. General management of poultry. Hatching and rearing chickens, ducks, geese, turkeys. Diseases of poultry, and how to prevent them. Marketing of eggs and poultry.

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7.—COTTAGE GARDENING.

Value of a garden to cottagers and small farmers. Preparation of soil in Autumn and Spring. When and how to apply manure. Kinds of seed to sow, and how to sow them. Cultivation of early and late potatoes, cabbages, carrots, parsnips, cauliflowers, Brussels sprouts, celery, beans, peas, turnips, leeks, and onions.

8.—FRUIT GROWING.

Preparation of the land. Fruit trees for different climates. How and when to plant. How to apply manure to fruit trees. Advantages of pruning and grafting. Suitable soil, climate, and treatment for the following crops:—Apples, pears, plums, gooseberries, raspberries, currants, strawberries. Best varieties of each. Marketing of fruit.

(b).—*Veterinary Science.*

1.—CONTAGIOUS DISEASES.

Cause of contagious diseases generally. Influence of micro-organisms. Mode of entry and dissemination. Organs attacked. Result. Mode of propagation to man. Hygienic rules to be adopted to arrest spread of disease. Special reference to tuberculosis, anthrax, blackquarter, foot-and-mouth disease, and strangles in the horse.

2.—PARASITIC SKIN DISEASES.

Mange in horses and dogs. Scab in sheep. Lice in cattle. Ringworm in horses, cattle, dogs, and cats.

3.—FIRST AID IN COMMONER AILMENTS AND INJURIES.

Colic in horses. Choking and hoven in cattle. Severe labour pains. Flooding after calving, &c. Straining and eversion of uterus. Wounds, &c. Hints to owner how to proceed to render his animal assistance until professional help can be obtained.

4.—CONTAGIOUS ABORTION.

An infectious disease of pregnant animals. How to prevent it. How to get rid of it. Mode of propagation of contagious and infectious diseases.

II.—SYLLABUS OF TECHNICAL INSTRUCTION LECTURES.

I.

TECHNICAL INSTRUCTION: ITS AIMS, ITS METHODS AND ITS UTILITY.

Objects of Technical Education, and its influence on commercial prosperity. Its necessity for plumbers, carpenters, and working tradesmen generally, with illustrative examples. Progressive character of industry, with the need for progressive education to cope with higher demands for intelligence and science in the artizan. (With Lantern Illustrations and some Experiments.)

II.

THE ELECTRIC CURRENT AND ITS INDUSTRIAL APPLICATION.

How a current of electricity is produced. How it is conveyed. Transmission from waterfalls, &c. What is a dynamo? How it may be used (1) as a generator of electricity; (2) as a motor. Tramways, railways, canal-boats. Application of electricity for lighting, for telegraphy (with and without wires), and for electric furnaces. The future of electricity as an adjunct to industry. Nature of the Technical Instruction needed to deal with this power. (Illustrated by Experiments and by Lantern Slides.)

III.

ART IN APPLICATION TO INDUSTRY.

Universality of the art instinct. Form and decoration. Design and workmanship. Good art and bad. Ancient Irish schools of art and their products. The modern revival of art, and its guiding principles. Machinery and handiwork. Commercial value of art. The value of art—knowledge in trades; its importance to the plasterer, carpenter, stone-cutter, house-painter, wood-carver, cabinet-maker, coach-builder, metal-worker, goldsmith, silversmith, glass cutter, engraver, printer, bookbinder, &c. Prospects of Ireland as a centre of art-work. (With Lantern Illustrations.)

IV.

THE BUILDING TRADES: WHAT TECHNICAL INSTRUCTION CAN DO FOR THEM.

The craftsman of the past and the craftsman of the present. The old guilds of handicraft. Apprenticeship under modern conditions of labour. Its comparative failure. How to supply the lack of trained workers, resulting from this. Necessity for schools of Technical Instruction in towns and rural districts. General review of the building trades which such a school would benefit, as masonry, bricklaying, carpentry, joinery, slating and tile-hanging, plumbing, glazing, painting, &c. (Illustrated by Drawings on the spot.)

V.

THE MACHINE TRADES: WHAT TECHNICAL INSTRUCTION CAN DO FOR THEM.

Principles of Technical Instruction for the artizan, foreman, or manager in the machine trades. Its necessity for fitters, turners, &c. Some typical errors arising through imperfect knowledge of the machines used. Fallacies of workmen who have little or no theoretic knowledge. (With Lantern Illustrations, and Experiments on some practical points in various trades.)

VI.

SCIENCE IN THE HOUSEHOLD, OR TECHNICAL INSTRUCTION FOR WOMEN.

Home and country—elevation of the individual, and elevation of the nation. The women's part. Housekeeping the universal trade. Need of technical education for women. Schools of Domestic Management on the Continent, in England. Technical training for women in Ireland. Food, clothing, and domestic hygiene. How knowledge and skill prevent waste and increase comfort. (With Lantern Illustrations.)

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VII.

The Influence of Technical Education on the Textile Industries at Home and Abroad.

The province and objects of technical education. Our Continental competitors, and their faith in technical training. Contrast of trade and industries of Germany in 1870 with the present day. Causes of this success. Origin of Textile Schools in Great Britain. The meaning and scope of a textile course of study. Continental Schools. Belgium—Ecole de Tissages at Ghent and Verviers. Their bearing upon the Cotton and Woollen Industries, French Silk Industry. The schools at Lyons and Roubaix. German Government Schools—Crefeld, Aachen, Berlin, Reutlingen. America's apprehension of textile institutes. Japanese Weaving School at Tokio. The work of Weaving Schools typified at the Paris Exhibition. Clothworkers' Departments of the Yorkshire College. Relation of theory to practical or experimental work. Museums as auxiliaries to technical schools. Museum of Commerce at Lyons. The influence of technical training on the workers, managers, and manufacturers. Industrial development dependent upon the efficiency of the National Scheme of Education. The trained compared with the untrained mind. Industrial problems. The nature of the industrial battle, and the factors which will make for continued success. (With Lantern Illustrations.)

Department of Agriculture and Technical
Instruction for Ireland,
Upper Merrion-street,
Dublin, *December*, 1900.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

PIONEER LECTURE SCHEME.

SUGGESTIONS FOR COUNTY COUNCILS AND LOCAL COMMITTEES REGARDING MEETINGS FOR LECTURES ON AGRICULTURAL SUBJECTS IN RURAL DISTRICTS.

Where they should be held.

Unless there are very special local reasons for doing otherwise, lectures should be held either (1st) in villages or small towns, in close proximity to a thickly-populated agricultural district, or (2nd) in a market town, on a market or fair day.

They should not be held in a provincial town unless on market or fair days.

The localities where they are held should be within easy reach of hotel accommodation for the lecturer,

WHEN THEY SHOULD BE HELD.

Meetings are usually most successful when held from November to March, both inclusive, or during May or the first half of June. On holidays or market days, in villages or market towns, when farmers are gathered together for other objects, they may be made successful at any time.

No meeting of farmers in any town or village should be summoned for the middle of the day, as, unless they are there for some other purpose, they will not leave their homes and work to hear any ordinary, and, perhaps, unknown lecturer, no matter what his subject is.

THE HOUR AT WHICH MEETINGS SHOULD BE HELD.

During the autumn, winter, and spring, meetings in villages should be held in the evening, from 6 p.m. to 6.30 p.m. in winter, and from 7 p.m. to 7.30 p.m. in autumn and spring. If held on holidays or church festivals, they should be arranged for at some interval in the proceedings. If held on market or fair days, the meetings should begin before the close of the market or fair. They should not be so early as to interfere with business, nor yet so late that people cannot get home at or near their usual time. Farmers will not leave their business to attend any agricultural lecture, nor will they do so, if their attendance means the missing of one train, car, &c., and probably waiting several hours for another.

IN WHAT BUILDINGS THE MEETINGS SHOULD BE HELD.

In villages and rural districts, the local school-room or other hall is usually the most convenient. In towns on market days, fair days, holidays, festivals, &c., any building should be utilised which is close to where the people are gathered.

WHO SHOULD TAKE CHARGE OF MEETINGS.

In every district where it is intended to hold one or more meetings, a small committee of farmers should be formed by the local members of the County Council or other persons holding some official position. These should arrange subject, place of meeting, hour, chairman, method of advertising, &c. If an agricultural society, local creamery, or other public body exists, the County Council and local committee should enlist their sympathy and support, and give them representation on the committee.

Without local effort and patronage, it is needless to expect satisfactory results, as meetings of this class, called by county or other officials, without local assistance and guidance, will meet with little support from the agricultural community.

HOW SUCH MEETINGS SHOULD BE ADVERTISED.

The Council or Committee should cause a short public announcement to be inserted in the local or other paper circulating in the district, and ask them to draw attention to the advertisement in the news column. This may be done two weeks or so before the meeting. At the same time, good-sized posters should be put up all over the district, giving subject, lecturer, date, place, and hour of meeting. These should be renewed two days or so before the date of meeting. If the assistance of an agricultural society or creamery has been enlisted, handbills may, with advantage, be printed and distributed to the members. The aid of the local clergy should be solicited in making the lectures known.

Each poster should refer only to one meeting and to one subject. On market and fair days, the bell-man of the town may profitably be sent round early in the day, and again just before the meeting is about to commence. Posters should not contain a list of meetings or subjects at other places. Newspaper advertisements and posters alone will not secure an appreciative audience unless supported by local efforts.

Who should be the Chairman.

The local committee should only choose as chairman a person in ful sympathy with the movement, and held in respect by the people. He should, if possible, be a practical farmer, and should take the lead in putting questions to the lecturer, and encouraging free discussion, while at the same time keeping it within due bounds, and not permitting the intrusion of questions that have no connection with the subject.

What Subjects should be Discussed.

The local committee should be consulted in the selection of the subjects from a list provided by the Department, and only such subjects should be selected as are likely to be interesting and profitable to the people of the district.

Who should be Invited.

For all dairy, cattle, and poultry subjects, women should be heartily invited, and a strong effort made to get them to attend. Every endeavour should be put forth to get the smaller class of farmers to turn out, as the larger occupiers of land, from better educational attainments and greater financial resources, are much more able to help themselves.

No. 4433.
1901.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

Upper Merrion-street, Dublin,
2nd April, 1901.

LOANS FOR EQUIPPING CREAMERIES WITH PASTEURIZING PLANT.

Sir,

I am directed to acquaint you, for the information of the County Council, that the Department of Agriculture and Technical Instruction, in view of the important part which the process of pasteurization plays in improving the quality of butter, and in averting the danger of infectious diseases being spread through the medium of separated milk, are desirous of facilitating as far as possible the use of this process in Irish dairying. They are, accordingly, prepared to make loans on certain conditions to owners of dairies, for the purpose of assisting them in the erecting of the necessary plant and machinery for the process of pasteurization. The conditions and terms on which such loans will be given may be had on application to the Department.

I am, Sir,
Your obedient Servant,

T. P. GILL,
Secretary.

To the Secretary of the ________________ County Council.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

CONDITIONS OF GRANTING LOANS FOR ERECTION OF PASTEURIZING MACHINERY.

1. That the loan applied for, or such smaller sum as the Department may decide to grant, shall be expended solely on the purchase and erection of pasteurizing machinery, and all estimates, plans, and specifications in connection with the proposed installation of plant shall be approved by the Department.

2. That the creamery shall, in all other respects, be properly and substantially erected and equipped, and that due provision shall have been made by the owners for defraying the outlay on its erection and equipment (other than that required for pasteurization), including an adequate water supply for cooling purposes.

3. That the loan, with interest at the rate of 3 per cent. per annum, from the date on which the loan is issued, shall be repaid to the Department in ten half-yearly instalments, payable on the 1st January and the 1st July, in each year, the first instalment being due and payable upon whichever of these dates first follows the issue of the loan.

4. That the repayment of the loan and interest to the Department be secured by a charge on the entire buildings and plant of the creamery, or by the collective bond of the owners of the creamery, or such other security as the Department may consider necessary.

5. That, until all instalments of principal and interest are paid, the creamery shall be open to inspection by the Department's officials, who shall be afforded free access to all books, statements of accounts, and other matters connected with the creamery and its management.

6. That, in the event of the Department becoming dissatisfied with the management of the creamery or with the care of the plant in

respect of which the loan has been granted, the owners of the creamery shall, on demand, repay the outstanding balance of the loan, or make such changes in the system of management as shall satisfy the Department.

7. That the owners of the creamery shall keep the entire premises and plant, and also the boiler adequately insured against fire, explosion, and collapse, with some company or companies approved by the Department, and shall maintain the building and plant in good working order, reasonable wear and tear excepted.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

SCHEME OF AGRICULTURAL EXPERIMENTS FOR 1901.

The Department of Agriculture and Technical Instruction for Ireland are prepared to assist in carrying out field and feeding experiments, which have for their objects the investigation of problems that arise from time to time in the course of farm practice. It is the intention of the Department to provide information for farmers on the most economical use of manures and feeding stuffs as well as on the suitability of Ireland for new varieties of crops which may be placed on the market. Leaflets dealing with these and kindred subjects will, from time to time, be issued.

In order that the information may be reliable, it will be necessary to conduct experiments and demonstrations under the directions of the Department in as many counties as possible, so that the influence of soil and climate may be taken into account when coming to a decision as to the methods and varieties of crops most applicable to any particular part of Ireland.

CONDITIONS ATTACHED TO EXPERIMENTS.

The conditions attached to these experiments are as follows :—

1. In the absence of special circumstances the Department will not subsidize experiments in districts where local aid is not provided.

2. Assistance will be given only in respect of experiments that are made under the auspices of :—

(*a*.) *County Councils ;*

(*b*.) *Agricultural Societies and Associations.*

3. Before assistance can be given by the Department to a County Council for this purpose, provision must be made by such Council for the appointment of a qualified Superintendent of Experiments. Where an itinerant Instructor in Agriculture is appointed, he should also act as Superintendent of Experiments under this Scheme.

4. Where the County Councils are not in a position to act in time for the present series of experiments, the Department will be prepared to consider a limited number of applications from Agricultural Societies and Associations, provided that the Department are satisfied as to the following conditions :—

(*a*.) That the experiments will be conducted under proper management ;

(*b*.) That the land, labour and suitable pegs for marking the plots will be supplied free of charge;

(*c*.) That the Society or Association will undertake the local arrangements for demonstrations on the plots during summer, and for a lecture in winter on the results of the experiments, and will meet any local expense involved in providing suitable accommodation for such lecture;

(*d*.) That a local secretary, who should be a person residing near the experimental plots, will be appointed at each centre for the purpose of conducting all correspondence with the Department relating to these experiments.

If these conditions are guaranteed the Department will provide, free of charge, technical advice, seeds and manures. In addition, the Department will, as far as practicable, send an expert, in summer, to explain the special objects of experiments and the results, so far as these can be determined by the appearance of the crop; and supply at least one lecture during the following winter on the results of the experiments, the local Association undertaking as above to secure a suitable room and an audience.

5. The land selected for the purpose of Field experiments must be, as far as possible, uniform, and be known to have been uniformly treated as regards manures and crops for at least two years previously.

6. All experimental plots must be marked off by pegs at least three inches square and two and a-half feet long.

7. As far as practicable the experiments should be made on land within easy reach of railway station, and at a place near the public road, or at least, easily accessible to the public.

8. As the number of experiments under this Scheme will necessarily be very limited, farmers and proprietors who have suitable land and accommodation for experiment, and who are in a position to devote the necessary time to such work are invited to conduct experiments in their private capacity. In such cases the Department will be prepared to assist by giving the requisite technical advice.

9. Experiments other than those included in the Department's Scheme for 1901 will not be recognised save in very exceptional circumstances. Any one or more of the experiments detailed in annexed Schedule may be selected.

10. Leaflets dealing with the results of these experiments will be prepared and distributed gratis by the Department.

SCHEME OF EXPERIMENTS FOR 1901.

1.—OAT CROP.

(A.)—*Influence of Manures.*

Size of Plots, one-tenth of an acre.

The following kinds and quantities of manure will be used per acre:—

No. of Plot.

1. No manure.
2. 1 cwt. Sulphate of Ammonia.

3. 3 cwts. Superphosphate.
4. 2 cwts. Kainit.
5. { 1 cwt. Sulphate of Ammonia.
   3 cwts. Superphosphate.
6. { 1 cwt. Sulphate of Ammonia.
   3 cwts. Superphosphate.
   2 cwts. Kainit.

(B.)—*Influence of Variety.*

Size of Plots, one-tenth of an acre.

The following varieties may be tested:—

No. of Plot.
1. Potato.
2. Black Tartarian.
3. Yellows.
4. Abundance.
5. Waverley.
6. Tartar King.
7. Pioneer.
8. Local variety.

II.—BARLEY CROP.

(A.)—*Influence of Manures.*

Size of Plots, one-tenth of an acre.

The kinds and quantities of manures per acre will be the same as for oats. (See page .)

(B.)—*Influence of Variety.*

Size of Plots, one-fourth of an acre.

The following varieties may be tested:—

No. of Plot.
1. Standwell.
2. Goldthorpe.
3. Chevalier.
4. Hallets.—First year imported.
   " Second year imported.
   " Third year imported.
5. Archers.—First year imported.
   " Second year imported.
   " Third year imported.

(C.)—*Influence of Time of Sowing.*

Size of Plots, one-fourth of an acre.

Time of sowing to be as follows:—

No. of Plot.
1. End of February.
2. Beginning of March.
3. Middle of March.
4. Beginning of April.
5. Middle of April.

(D.)—*Influence of Method of Sowing.*

Size of Plots, one-fourth of an acre.

The following will be tested:—

No. of Plot.

1. Rows four and a-half inches apart.
2. Rows eight inches apart.
3. Seed ploughed in.

(E.)—*Influence of Quantity of Seed.*

Size of Plots, one-fourth of an acre.

The following quantities of seeds will be tested:—

No. of Plot.

1. 6 stone per acre.
2. 8 stone per acre.
3. 10 stone per acre.
4. 12 stone per acre.

III.—WHEAT CROP.

(A.)—*Influence of Variety.*

Size of Plots, one-tenth of an acre.

The following varieties may be tested:—

No. of Plot.

1. Square Head.
2. Square Head Master.
3. Stand Up.
4. Royal Prize.
5. White Pearl.
6. Red King.
7. Windsor Forest.
8. Local Variety.

IV.—TURNIP CROP.

(A.)—*Influence of Manures.*

Size of Plots, one-twentieth of an acre.

The following kinds and quantities of manures will be used per acre:—

(*a*.)—*With Farmyard Manure.*

No. of Plot.

1. No manure.
2. 20 tons farmyard manure.
3. 10 tons farmyard manure.
4. 10 tons farmyard manure.
   4 cwt. Superphosphate.
5. 10 tons farmyard manure.
   4 cwt. Superphosphate.
   1 cwt. Sulphate of Ammonia.
6. 10 tons farmyard manure.
   4 cwt. Superphosphate.
   1 cwt. Sulphate of Ammonia.
   3 cwt. Kainit.

(*b.*)—*Without Farmyard Manure.*

The following kinds and quantities of manures will be used per acre:—

No. of Plot.

1. No manure.
2. 1 cwt. Sulphate of Ammonia.
3. 4 cwt. Superphosphate.
4. 4 cwt. Kainit.
5. 4 cwt. Superphosphate.
   1 cwt. Sulphate of Ammonia.
6. 4 cwt. Superphosphate.
   1 cwt. Sulphate of Ammonia.
   3 cwt. Kainit.
7. 2 cwt. Superphosphate.
   2 cwt. Pure Dissolved Bone.
   1 cwt. Bone Flour.
   ½ cwt. Sulphate of Ammonia.
   2 cwt. Kainit.

(B.)—*Influence of Variety.*

Size of Plots, four ridges full length of field.

The following varieties may be tested:—

No. of Plot.

1. Stirling Castle.
2. Improved Purple Top.
3. Elephant.
4. Kangaroo.
5. Best of All.
6. Magnum Bonum.
7. Green Top.

No. of Plot.

8. Lord Derby.
9. Halewood.
10. Defiance.
11. Aberdeen Green Top.
12. Fosterton Hybrid.
13. Purple Top.
14. Achilles.

V.—MANGOLD CROP.

(A.)—*Influence of Manure.*

Size of Plots, one-twentieth of an acre.

The following kinds and quantities of manures will be used per acre:—

No. of Plot.

1. No manure.
2. 15 tons farmyard manure.
3. 15 tons farmyard manure.
   4 cwt. Superphosphate.
4. 15 tons farmyard manure.
   4 cwt. Superphosphate.
   2 cwt. Sulphate of Ammonia.
5. 15 tons farmyard manure.
   4 cwt. Superphosphate.
   2 cwt. Sulphate of Ammonia.
   2 cwt. Kainit.
6. 15 tons farmyard manure.
   4 cwt. Superphosphate.
   2 cwt. Sulphate of Ammonia.
   4 cwt. Salt.

(B.)—*Influence of Variety.*

Size of Plots, four ridges full length of field.

The following varieties may be tested:—

No. of Plot.
1. Yellow Globe.
2. Prize Winner.
3. Crimson Tankard.
4. Golden Tankard.
5. Mammoth.
6. Long Red.
7. Windsor Prize Taker.
8. New Triumph.
9. Golden Globe.
10. Local Variety.

VI.—POTATO CROP.

(A.)—*Influence of Manures.*

Size of Plots, one-twentieth of an acre.

The following kinds and quantities of manures will be used per acre:—

No. of Plot.
1. No manure.
2. 20 tons farmyard manure.
3. 15 tons farmyard manure.
4. 15 tons farmyard manure.
   1 cwt. Sulphate of Ammonia.
5. 15 tons farmyard manure.
   1 cwt. Sulphate of Ammonia.
   4 cwt. Superphosphate.
6. 15 tons farmyard manure
   1 cwt. Sulphate of Ammonia.
   4 cwt. Superphosphate.
   1 cwt. Muriate of Potash.
7. 15 tons farmyard manure.

(B.)—*Influence of Variety.*

Size of Plots, one-twentieth of an acre.

The following varieties may be tested:—

No. of Plot.
1. Reliance.
2. Black Skerries.
3. Champion II.
4. Old Champion.
5. Beauty of Bute.
6. Up to date.
7. Maincrop.
8. Matchless.
9. Diamond Jubilee.
10. Sir Walter Raleigh.
11. Commonwealth.
12. Perfection.
13. Empress Queen.
14. Epicure.
15. Hibernia.
16. Dr. Matthew.

(C.)—*Influence of Boxing "Seed."*

Size of Plots, one-twentieth of an acre.

No. of Plot.
1. "Seed" sprouted in boxes.
2. Seed prepared in usual way.

(D.)—*Influence of Spraying.*

Size of Plots, one-tenth of an acre.

The following will be compared :—

No. of Plot.
1. Unsprayed.
2. Effect of a 2 per cent. Bordeaux Mixture, single application.
3. Effect of a 2 per cent. Bordeaux Mixture, double application.
4. Effect of a 3 per cent. Bordeaux Mixture.
5. Effect of a 2 per cent. Burgundy Mixture, single application.
6. Effect of a 2 per cent. Burgundy Mixture, double application
7. Effect of a 3 per cent. Burgundy Mixture.
8. Unsprayed.

Destruction of Charlock (Preshaugh) and other Weeds.

Size of Plots, one-tenth of an acre.

The following Solutions will be tested :—

No. of Plot.
1. Unsprayed.
2. 50 gallons 2 per cent. Sulphate of Copper.
3. 50 gallons 4 per cent. Sulphate of Copper.
4. 50 gallons 10 per cent. Sulphate of Iron.
5. 50 gallons 15 per cent. Sulphate of Iron.
6. 3 per cent. Sulphate of Copper, double application.
7. 10 per cent. Sulphate or Iron, double application.
8. Unsprayed.

VII.—HAY CROP (Meadow).

Influence of Manures.

(1.)—*For one year.*

Size of Plots, one-twentieth of an acre.

The following kinds and quantities of manures will be used per acre :—

No. of Plot.
1. No manure.
2. 10 tons farmyard manure.
3. 1 cwt. Nitrate of Soda.
   2 cwt. Superphosphate.
   2 cwt. Kainit.
4. 1 cwt. Nitrate of Soda.
   2 cwt. Superphosphate.
5. 1 cwt. Nitrate of Soda.
6. No manure.

(2.)—*To be continued for several years.*

The following shows the kinds and quantities of manures to be applied per acre during the first two years :—

No. of Plot.	1901.	1902.
1.	No manure.	No manure.
2.	10 tons farmyard manure.	No manure.
3.	10 tons farmyard manure.	10 tons farmyard manure.
4.	10 tons farmyard manure.	1½ cwt. Nitrate of Soda.
5.	10 tons farmyard manure.	1½ cwt. Nitrate of Soda. 2 cwt. Superphosphate.
6.	10 tons farmyard manure.	1½ cwt. Nitrate of Soda. 2 cwt. Superphosphate. 2 cwt. Kainit.
7.	1½ cwt. Nitrate of Soda. * lbs. Basic Slag. 2 cwt. Kainit.	Same as 1901.
8.	1½ cwt. Nitrate of Soda. * lbs. Bone Flour. 2 cwt. Kainit.	Same as 1901.
9.	† Sulphate of Ammonia. 2 cwt. Superphosphate. 2 cwt. Kainit.	Same as 1901.
10.	1½ cwt. Nitrate of Soda. 2 cwt. Superphosphate. 2 cwt. Kainit.	Same as 1901.
11.	1½ cwt. Nitrate of Soda. 2 cwt. Superphosphate.	Same as 1901.
12.	1½ cwt. Nitrate of Soda	Same as 1901.
13.	No manure.	No manure.

VIII.—IMPROVEMENT OF SECOND CLASS PASTURE.

(A.)—*Improvement to be estimated by Observation.*

Size of Plots, one acre.

The following treatment will be tested :—

No. of Plot.
1. 10 cwt. Basic Slag per acre.
2. No treatment.

(B.)—*Improvement to be determined by feeding Sheep on each Plot.*

Size of Plots, four acres.

The following are the kinds and quantities of manures per acre :—

No. of Plot.
1. No manure.
2. 10 cwt. Basic Slag.
3. 10 cwt. Basic Slag.
   4 cwt. Kainit.
4. 10 cwt. Basic Slag.
   4 cwt. Kainit.
   1 cwt. Nitrade of Soda annually.

In (B.) the land must be available for ten years. The plots will be fenced off and rented by the Department.

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*A quantity containing Phosphoric Acid equal to that in 2 cwt. Superphosphate.
†A quantity containing Nitrogen equal to that in 1½ cwt. Nitrate of Soda.

IX.—Flax Crop.

(A.)—*Influence of Manures.*

Size of Plots, one-twentieth of an acre.

The following kinds and quantities of manures will be used per acre:—

No. of Plot.

1. No manure.
2. 5 cwt. Superphosphate.
3. 5 cwt. Kainit.
4. 1 cwt. Sulphate of Ammonia.
5. 1 cwt. Sulphate of Ammonia.
   2 cwt. Superphosphate.
6. 1 cwt. Sulphate of Ammonia.
   2 cwt. Superphosphate.
   3 cwt. Kainit.

(B)—*Influence of Cultivation*

Size of Plots, one-fourth of an acre.

The following methods of cultivation with Riga seed will be compared:—

No. of Plot.

1. Shallow ploughing.
2. Deep ploughing.
3. Once ploughed.
4. Twice ploughed or ribbed.

(C.)—*Influence of Variety of Seed.*

Size of Plots, one-tenth of an acre.

The following are the varieties of seed to be tested:—

No. of Plot.	No. of Plot.	No. of Plot.
1. Riga (Foreign).	3. Dutch (foreign).	5. Canadian.
2. Riga (home).	4. Dutch (home).	6. Indian.

(D.)—*Influence of Method and Time of Sowing.*

Size of Plots, one-tenth of an acre.

The following methods will be tested with Riga Seed:—

No. of Plot.

1. Thin sowing.
2. Thick sowing.
3. Early sowing.
4. Late sowing.
5. Medium sowing with Rye Grass and Clover.
6. " " without " "

(E.)—*Influence of Harvesting.*

The following points will be compared:—

(In each case the yield of seed as well as of fibre will be ascertained.)

No. of Plot.

1. Pulling at early stage of ripeness.
2. " usual " "
3. " late " "

(F.)—*Retting Experiments.*

(G.)—*Scutching Experiments.*

Details of (F.) and (G.) will be intimated on a later date.

X.—INFLUENCE OF SEED MIXTURES IN FORMING PASTURE.

Laying out Land in Grass for not less than Two Years.

Size of Plots, one-tenth of an acre.

The following mixtures may be tested:—

(The figures indicate the percentage of the total area to be occupied by the particular seed.)

—	Plot No. 1.	Plot No. 2.	Plot No. 3.	Plot No. 4.	Plot No. 5.	Plot No. 6.	Plot No. 7.	Plot No. 8.
Perennial Rye Grass, .	10	30	10	10	10	10	10	10
Italian, ...	10	-	-	-	-	-	-	-
Cocksfoot, . . .	10	10	30	10	10	10	10	10
Timothy, . . .	10	10	10	30	10	10	10	10
Meadow Fescue, . .	10	10	10	10	30	10	10	10
Meadow Foxtail, . .	10	10	10	10	10	30	10	10
Crested Dogstail, . .	10	5	5	5	5	5	5	5
Red Clover, . . .	10	10	10	10	10	10	10	10
White Clover, . .	10	10	10	10	10	10	30	30*
Alsyke Clover, . .	10	5	5	5	5	5	5	5

* Wild White Clover.

XI.—FEEDING VALUE OF DIFFERENT GRASSES.

Each of the following Grasses will be grown separately, and made into hay at the proper season:—

The influence and the quality will be tested by analysis, and by a feeding experiment.

Size of Plots, 1 acre.

No. of Plot.

1. Perennial Rye Grass.
2. Cocksfoot.
3. Timothy.
4. Meadow Fescue.
5. " Foxtail.

XII.—INFLUENCE OF FOOD ON THE QUANTITY AND QUALITY OF MILK.

The following experiment will be carried out at one or two centres if suitable accommodation can be provided.

Twelve cows will be required for the complete experiment; but two of the rations may be tested with four cows.

For two weeks they should be fed on a general ration, during which samples of the milk will be regularly taken for analysis, and the yield noted. The cows should then be divided into three lots of four each, and in such a way that the three lots may be, as far as possible, uniform as regards the period of lactation.

Lot 1 should then be gradually changed to ration No. 1, which should be given for four weeks, after which ration 2 would be substituted for a second period of four weeks.

Lot 2 should similarly receive rations 3 and 4.

Lot 3 should, likewise, be fed on rations 5 and 6.

In all cases the milk would have to be weighed, sampled, and analysed according to directions supplied by the Department.

The following are the rations. The quantities are subject to revision after analysis of the foods:—

—	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Meadow Hay, ...	20	20	20	20	20	20
Swedes, ...	56	-	56	56	84	-
Treacle, ...	-	2	-	-	-	-
Oats, ...	3	3	-	-	3	4
Maize, ...	3	3	6	3	3	4
Cotton Cake, Decorticated, . . .	3	3	3	6	3	4
No. of Ration, ...	1	2	3	4	5	6

XIII.—PROFITABLE USE OF FARMYARD MANURE.

The best method of utilising farmyard manure is a point that has not yet been determined.

The following preliminary experiments on meadow land may be made:—

Size of Plots, one-fourth of an acre.

Seven and a-half tons of newly-made farmyard manure should be divided into three lots of two and a-half tons each, in December. One lot should then be applied to Plot 1. A second lot should be put into a tidy heap and left until the end of February, when it should be applied to Plot 2. A third portion of farmyard manure should be put into a heap similar to the last, but should be turned in the month of January and applied to Plot 3 in February at the same time as the second lot is applied to Plot 2.

TECHNICAL INSTRUCTION.*

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* See also pp 162–164.

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EXPERIMENTAL SCIENCE, DRAWING, AND MANUAL INSTRUCTION IN SECONDARY SCHOOLS, 1901-2.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

I.—EXPLANATORY CIRCULAR TO MANAGERS AND HEAD TEACHERS OF SECONDARY SCHOOLS.

UPPER MERRION STREET, DUBLIN.
April, 1901.

SIR OR MADAM,

Under Section 2 (1) (*e*) of the Agriculture and Technical Instruction (Ireland) Act, 1899, the administration of the Grant for Science and Art in Ireland is to be transferred to this Department from 1st April, 1901.

This Grant, which has hitherto been administered by the Board of Education, South Kensington, is, as you are doubtless aware, an Annual Parliamentary Vote, variable in amount in accordance with the extent to which the instruction in Science and Art is adopted; and it includes provision for aid towards the cost of the apparatus and equipment necessary for the teaching of these subjects in Schools. The Grant is not to be confounded with the funds placed at the disposal of the Department for the purposes of Technical Instruction, in accordance with the provisions of Section 16 (1) (*c*) (ii) of the Agriculture and Technical Instruction (Ireland) Act, 1899; nor with the Grant in aid of Technical Instruction, which is available when Local Authorities raise rates under the Technical Instruction Act of 1889.

The Department, in taking over the Science and Art Grant, feel that the methods of assessing it might with advantage be changed, in order to render it more directly applicable to existing educational needs in Ireland. They have accordingly prepared new Regulations for the administration and distribution of Grants for Experimental Science, Drawing, and Manual Instruction in Secondary Schools. These Regulations, together with suggested Syllabuses, are enclosed herewith.

In the main, the new Regulations form a scheme of payments, based on the results of inspection, for instruction in Experimental Science, Drawing, and Manual Work or Household Economy.

The Department do not consider it advisable to issue a detailed programme of study which all Schools should follow. They believe rather that the variety of arrangements (made possible by what is considered an elastic system of payments) no less than the variety of Schools, will lead to variety of programme; and it is hoped that in this way, opportunities will be afforded to each School to stamp its individuality on the character of the instruction. I am to say, therefore, that within certain limits, such as that the subject must be taught practically (as defined later on), that Physics must precede Chemistry, and that the general character of the suggested Syllabus must be adhered to, Managers will be allowed considerable latitude in modification of details.

Again, as the number of hours per week to be devoted to the work will greatly vary, much latitude will also be permitted in the amount of work expected from a School. At first the Scheme will be treated as tentative, and the work for the first year, at least, will be regarded as an experiment. The work will be tested by inspection, without notice, usually; but, towards the close of the School year, the Inspector will give notice of his visit of final inspection for that year. At such visits, but especially on the visit of final inspection, it will be within the discretion of the Inspector to test any or all of the classes by practical exercises in the laboratory, or by *viva voce* examination of classes or of individuals, or by written examinations, or by a combination of these methods.

You will observe that the Grants to be paid may be increased by one-tenth or reduced by one or more tenths, as the Department may determine on receipt of the Inspector's Report. Reduction by more tenths than one will be exceptional. The Department would prefer, in cases where such exceptional treatment was necessary, to give a School reasonable warning, and, unless marked improvement followed, to remove such School from the list of those aided by the proposed system of Grants.

In many Schools one laboratory will be sufficient. It will be necessary to have laboratories approved, and, in cases where application is to be made for a grant for fittings or for apparatus, the plans of the laboratory and the details of the apparatus should be submitted to the Department for approval *before the laboratory is built or equipped and before the apparatus is purchased.*

The Department regard the question of the qualification of teachers as of the utmost importance. They have arranged that increased opportunities for the training of qualified teachers shall be available at the Royal College of Science, and they will, by means of Summer Courses, assist Schools in this particular as far as possible. But it must be fully understood that a three weeks' or a month's Summer Course alone is not sufficient to qualify a teacher to give such instruction as the Department contemplate, and further, that none but properly qualified teachers of Science, Drawing, Manual Instruction and Household Economy will be recognised. The Degree of any University, or the Diploma of any approved Technical College, where Physics and Chemistry are part of the Degree or Diploma Course, or First Class Certificates in the Advanced Stages of any two Physics subjects (see Science and Art Directory) *and of* Inorganic Chemistry, will, for a time, be recognised as qualifying to teach Science in Secondary Schools, but the Department will, at the earliest convenient moment, require proof that the teachers have also had a practical Course in an approved Laboratory.

The Teacher's Elementary Drawing Certificate is the lowest qualification that will be recognised for a Teacher of Drawing, and it is hoped that in a short time it may be found convenient to raise the standard of qualification to that of the Art Class Teacher's Certificate. (See Science and Art Directory.)

The Diploma of the London City and Guilds' Institute will be the recognised qualification for a Teacher of Manual Instruction.

The Department will be prepared to consider cases of exceptional qualification and to offer facilities (on certain conditions to be obtained on application) for the examination of teachers who do not hold the recognised Certificates, but who consider themselves competent to teach the subjects referred to.

Schools proposing to give instruction of the character described, must submit annually before the 15th August, on forms to be obtained from the Department, a time table of the School, a statement of the qualifications of the teachers to be employed, and of the course to be followed.

It will not be necessary that the Course of Instruction should be taken up by all the pupils in a School; but no grant will be paid on a pupil of the Second Year's Course unless he has taken up the work of the first year, and so on.

During the first year or so (*i.e.*, in what must be a transition period) the Department will, as far as possible, assist Schools in overcoming the initial difficulties so long as the character and aims of the instruction are not seriously interfered with.

I am to add that arrangements have been made with the Intermediate Education Board for Ireland whereby the Board adopt the Department's Programme in Experimental Science and Drawing. (See accompanying copy of the Resolution adopted by the Intermediate Education Board.) The Details of the arrangements by which Schools and Pupils may obtain credit, under the regulations of the Intermediate Education Board, for proficiency in Experimental Science and Drawing will be published in due course.

I am,
Sir or Madam,
Your obedient Servant,
T. P. GILL,
Secretary.

II.—RESOLUTION ADOPTED BY THE INTERMEDIATE EDUCATION BOARD FOR IRELAND.

AT THEIR MEETING ON THURSDAY, 21ST FEBRUARY, 1901.

Resolved:—

"That the Board adopt the Programme in Science and Drawing set forth in the 'Suggested Syllabus' prepared for Secondary Schools by the Department of Agriculture and Technical Instruction for Ireland.

"That Natural Philosophy, Chemistry, and Drawing be replaced in our Programme by one subject, viz, 'Experimental Science and Drawing,' and that after the present year, until a year's notice shall have been given by us, we shall not hold any examinations in this subject, but shall accept the inspection and, where necessary, the examination of the Department."

[NOTE.—The Intermediate Education Board have under consideration the question of exhibitioners whose interests may be prejudiced by the changes in the regulations regarding Science and Drawing.]

III.—REGULATIONS FOR THE ADMINISTRATION AND DISTRIBUTION OF GRANTS FOR EXPERIMENTAL SCIENCE, DRAWING, AND MANUAL INSTRUCTION IN SECONDARY SCHOOLS IN IRELAND.

I.

Grants in respect of courses of instruction in Experimental Science, Drawing, Manual Instruction, and Household Economy, may be made in accordance with the following regulations to *Secondary Schools* where provision is made for instruction in the other main branches of a general education:—

(1.) Grants shall be payable only on Students over 12 years of age (on or before the 1st day of June in the calendar year in which the course is entered on) who have completed an education which would entitle them to be placed in the Sixth Class of a School under the Board of National Education in Ireland.

(2.) Grants shall be payable to those Day Schools only in which the course of instruction has been approved by the Department.

(3.) The minimum number of hours devoted to instruction in Science and Drawing shall be four hours per week, of which three shall be given to Science and one to Drawing.

(4.) The minimum duration of an approved course shall be two years.

II.

(1.) *Experimental Science* shall mean such a system of instruction in Physical and Natural Science as will involve the greater part of the work being done by the pupils themselves in an approved laboratory.

Drawing must include Freehand, and may include Mechanical Drawing (with Practical Geometry) and Modelling.

Manual Instruction shall include instruction in the use of tools employed in Wood or Metal Working.

Household Economy may include Cookery, Laundry Work, Dress-making, and any other form of practical instruction in household management of which the Department may approve.

(2.) Managers of Schools may submit their own courses of instruction in these subjects for the approval of the Department.

(3.) Grants may be made on the average attendance of duly qualified pupils for each hour per week of instruction throughout the School Year, according to the following scale:—

Experimental Science—10*s.* for the first year of the course; 12*s.* 6*d.* for the second year of the course; 15*s.* for the third or fourth year of the course.

Drawing—5*s.* for the first year of the course; 6*s.* for the second year of the course; 7*s.* for the third or fourth year of the course.

Manual Instruction and Household Economy—6*s.* for the first year of the course; 7*s.* for the second year of the course; 8*s.* for the third or fourth year of the course.

(4.) The numbers on which grants for each subject are to be calculated, at the foregoing rates, shall be determined by adding together the total number of hours of attendance made by each pupil in that subject (at the approved time table hours) and dividing by forty, the normal School Year being regarded as of forty weeks.

III.

(A.) In Schools in which a fair proportion of pupils remain three or four years, the course shall consist of at least Experimental Science and Drawing. Not less than three hours per week shall be devoted to Experimental Science, and one to Drawing. If more than six hours per week are devoted to Science and Drawing, Manual Instruction or Household Management shall also form part of the course; and, in that case, at least one and a half hours shall be devoted to either of these subjects.

(B.) 1. In Schools in which the majority of the pupils remain only two years, Manual Instruction or Household Economy, with Experimental Science and Drawing, shall constitute the course.

2. In certain cases Practical Mathematics and Mechanical Drawing may be substituted, with the sanction of the Department, for Experimental Science, the grants being in such cases the same as those for Drawing.

3. The minimum number of hours per week for a two years' course shall be six.

IV.

(1.) No scheme will be approved unless the Department are satisfied that due provision is made for the instruction of the pupils in the other main branches of a general education.

(2.) No grant will be made for instruction unless due provision is made for experimental work in Science on the part of the pupils, in properly equipped and approved laboratories.

(3.) Not more than forty pupils shall be taken at a time by one teacher, for Theoretical Instruction in any subject, nor more than twenty for Practical Instruction in Science, unless an Assistant is provided, in which case the number may be increased to thirty.

(4.) Practical Instruction in Science must be given in lessons of at least eighty minutes' duration. The time table of the School must be arranged so as to leave sufficient time to the Science Master for preparation of laboratory work.

(5.) The qualification of the Teacher and the time table of the School must be approved by the Department.

(6.) The grant to be made in respect of any course, in accordance with the foregoing regulations, may in exceptional cases, be increased by one-tenth when the Inspector of the Department is of opinion that the work is of conspicuous merit. It may also be reduced by one or more tenths on the ground of unsatisfactory work, or for defects of equipment or of organisation, or for any other cause which may tend to lessen the efficiency of the work done.

(7.) It shall be a condition of grants being made, that, except in the case of teachers who give their services gratuitously, a fixed salary shall be paid to the teachers of the classes, either in respect of these classes or of their work in the School as a whole; that a reasonable sum of money shall be provided for the upkeep of the premises; and that the grants obtained shall be paid into the School account and be used for improving the efficiency of the School.

V.

1. Grants will only be made upon a satisfactory report by an Inspector of the Department. The Inspector must satisfy himself not only that the attendances on which the claim is based have actually been made, but also that the instruction is of a class superior to that admitted in Elementary Schools.

VI.

1. The Course of Instruction should begin in August or September of any year, and should be continuous throughout the school year. The hours per week devoted to the course must be fairly distributed throughout that school week. In exceptional circumstances, where *previous* application has been made, the Department may sanction another arrangement. Deviations from the approved time table, unless *previously* sanctioned, will be regarded as a serious irregularity.

2. Lessons of less than forty minutes' duration will *not* be considered in computing the "total number of hours of attendance" under II. (4).

3. Attendance registers will be supplied by the Department: attendances not registered in the manner indicated on the official registers will be disregarded.

4. That portion of the income of a School which is derived from Grants in accordance with these Regulations must be applied to such purposes as shall be approved by the Department. If at any time it appears that the application of the income is unsatisfactory, the assistance of the Department may be withdrawn. An account of the receipts and expenditure of each School in respect of these Grants must be furnished to the Department annually, on a form to be had from the Secretary.

5. The Department reserve the right to withhold grants under these regulations from any School conducted for private profit in which the fees are, in the Department's opinion, excessive, or which is situated in a locality already sufficiently supplied with public institutions.

6. The decision of the Department in all questions arising in connection with the payment of Grants under this scheme must be final.

COURSE IN SCIENCE.

I.—PREFATORY NOTE.

The committing of facts to memory, however important or useful, is not Science teaching; and it is hoped, therefore, that during at least the first two years of the course the text-book will occupy a very small (if any) share in the work of instruction. The object in view is the introduction of the scientific method of Science teaching as a means of mental discipline; and it is because the methods and spirit of the teaching cannot be measured by the ordinary form of written examination, that the annual written tests have been abandoned in favour of inspection.

The principles underlying the scientific method are (1) careful and accurate collection of facts, (2) observation of the inter-relation and sequence of facts, (3) construction and testing of hypotheses to account for facts; and it is possible, even in the simplest exercises, to have due regard to these principles. To the scientific method, the mere *telling*, or *learning*, of facts is therefore opposed. The work is to be practical, and by this is meant the working out of the exercises by the pupils themselves. The business of the teacher is to shape his course of instruction by exercises chosen on some definite plan; to instruct his pupils how to measure and weigh accurately, and, in general, how to collect the results of their observations; and to assist them in arriving at correct conclusions. Results should, as far as possible, be tested in more ways than one; and the pupils should gradually gather confidence in their own observations, so that, whether hopeful or not as to the correctness of their conclusions, they should have complete confidence in the accuracy of their facts.

As far as possible, the "research" method should be adopted even in the earliest exercises; but the teacher will probably find that at one time the "research" method, and at another the method of "verification" will best serve the interests he has at heart, and carry along his work without undue loss of time. Instructions as to the carrying out of exercises will necessarily *precede* the actual measurements, weighings, and so on; but the drawing of conclusions, the driving home, so to say, of the meaning of the facts, will *follow* laboratory practice. To this end the class should be "kept together." Much of the value of this kind of teaching is lost in the case of young pupils if individuals are allowed to "go on."

Pupils may be allowed to work in pairs, but not in groups of three or four. Careful consideration of the exercises, with a view to such modification of details as will reduce the duplication of sets of apparatus will, therefore, be demanded of the teacher. The apparatus used should be as simple and inexpensive as possible. At the present moment it is not proposed to issue a list of necessary apparatus; the choice is left to individual Schools. But one balance (costing from 30*s.* to 40*s.*) will be necessary during the first two years for each pair of pupils in any one laboratory class. Afterwards a few more delicate balances will be required.

A word about the exercises themselves may be useful In the measurements of length, area, and volume, the attention of the pupil should not be confined to small objects. The metre stick, the foot rule, the yard stick, a tape, and, where available, a surveyor's chain, should all be used; the circumference of a small coin, of a circle of large dimensions; the area of an envelope, of a pane of glass, of the surface of the working bench or of the floor; the volumes of flasks and of vessels of large size, such as pails, barrels, and even cisterns, should all be measured in English and metric units. In a word, the scale of the exercises should be largely varied, and the pupils should learn through experience the limits of accuracy imposed and the consequent reduction of arithmetical labour. No calculation should be carried further than the number of decimals in the least accurate factor of it. Where the experimental error is clearly not less than 1 per cent. it is at least a waste of time to produce an answer containing seven or eight decimal places.

Again, an exercise like the finding of the weight of 1 c.c. of water, should be determined under various conditions of temperature (not exactly noted, say, hot, warm, cold), the results of the whole class when tabulated would indicate the influence of temperature, and open the way for the later consideration of expansion.

The record of the exercises is only less important than the exercises themselves. A laboratory book of uniform size, and with a fair proportion of pages of squared paper should be in the possession of every pupil. The method of performing an exercise should be described in a few sentences, the apparatus should be neatly sketched, and the results of observations entered in ink (arithmetical results tabulated in ink) at the time of working the exercise. The carrying of the results of weighing or of measurement and so on "in the head," or the writing of results on scraps of paper not only lead to loss and consequent waste of time, but will also counteract those habits of neatness and accuracy which are regarded as essential characteristics of the work.

It may occasionally be found advisable (owing to the nature of the experiment or to the character of the apparatus required) to perform an experiment in the class-room and to omit it from the laboratory course. Such cases must be exceptional, and they must be clearly separated from what is understood to be the work of the pupils. It is suggested that the right hand page of the laboratory book might be used for the pupils' work, and the left hand page for such exceptional exercises as are referred to here, and for theoretical considerations, conclusions, summaries, and so on. All exercises should be dated. Under no circumstances should measurements or calculations, or work of a similar character, be obtained from any source but the pupil's observations—not necessarily unaided, but largely his own. A good teacher will not overlook the opportunities which arise for emphasising the importance of good spelling, grammatical correctness, and careful selection of words, phrases, and sentences; but all these will be subsidiary to the main object—the discipline to be obtained from practice in physical methods.

The use of squared paper, especially for the "curving" of the relation between two varying quantities, is of much importance. Squared paper should not only be used in connection with areas and, say, the verification of certain of Euclid's propositions; but the daily readings of the thermometer and of the barometer should be curved (the relation of the curves to the character of the weather may be brought out), and such observed results as the relation of the circumference to the diameter of a circle; of the area to the square of the diameter; of the volume to the weight of solids of the same substance, but of different dimensions; of the pressure to the volume of a gas, the temperature being constant; of the volume to the temperature, the pressure being constant; of the pressure to the boiling temperature of water; of the length of a pendulum to the square of the time of one vibration, and so on; should all be plotted and the curve drawn, and exercises given to bring out the value of the curve as an important aid to the increase of knowledge.

Not less frequently than the close of each series of lessons, which aims at bringing out a general principle, should the results be summarised and the conclusions indicated. At the same time it should be clearly set out how far the problem in hand has been solved, and how far the results or conclusions are inadequate.

It has not been considered advisable to suggest a third or a fourth year's course at the present moment. Such a syllabus had better come after some experience in the working of the system. It is hoped, however, that the first two years' courses will be found suitable for all pupils as an introduction to Physical or Natural Science; and that, however small the knowledge acquired, the pupil who works thoroughly through this course will gain a notion of the methods and ideas which will meet him at all stages of his further progress in any branch of Science, if not in any occupation in life.

II.—SUGGESTED SYLLABUS.

[NOTE.—In Schools taking advantage of these Regulations during the Session 1902, the Department would recommend the First Year's Course for all grades of pupils. Fuller treatment of the subjects would be expected of the more advanced Classes. Payments allowed for the Session 1901–2 would in all cases be those for the first year of the Course.]

FIRST YEAR.—INTRODUCTORY PHYSICS.

Measurement of Length.—English and metric measures of length: comparison of one system with the other by actual measurements. Measurements of lengths of straight and curved lines. Use of parallel blocks: calipers. Determination of π. Use of vernier.

Measurement of Area.—Units of area. Reasons for expression of areas as squares. Direct methods of determining the areas of regular figures. Determination of the area of parallelograms, triangles, polygon, by measurement of linear dimensions. Use of cardboard or other material in the determination of areas. Area of circle, deduced from the relation between the weight of a circle of cardboard and the weight of a square of the same cardboard of side equal to the radius of the circle, and in other ways; indirect methods of determining π, using as figures the circle and the ellipse. Indirect methods of determining areas: use of squared paper: verification of some of the proposition of Euclid, as, *e.g.*, I. 47.

Measurement of Volume.—Units of volume. Reason for expression of volumes as cubes. Direct calculation of the volumes of regular solids from measurements of their linear dimensions. Use of fluid measures: burette, pipette, graduated cylinders, &c. Relation between the volumes of a pyramid and a prism of equal base and altitude: also of a cone and cylinder, proved (1) by measurement of water displaced, (2) by comparison of weights. Indirect measurement of volume.

Measurement of Mass and Density.—By measurements of volume and weight, find the weight of 1 c.c. of various solids and liquids. Weight of 1 c.c. of water. Definition of mass. Definition of absolute density. Definition of relative density or specific gravity. Proof of Archimedes' principle. Determination of the densities of solids heavier than water by weighing in air and in water. Flotation methods of determining density. *Hydrometers.*—Use of Nicholson's hydrometer to determine density. Density of a liquid determined by (1) burette and balance, and (2) specific gravity bottle, (3) weighing a heavy solid in water and in the given liquid. Hare's hydrometer: lactometer.

At this stage should follow some exercises on the "lever" and "pendulum": the lever, in order that the principles of action of the balance may be understood: the pendulum in order that the pupils may not only understand the principle of the pendulum as a time-measurer, but also that they may be exercised in time measurements such as are required shortly afterwards in connection with "Heat."

Lever.—Equilibrium of a lever with two or more weights. Principle of moments. Weight of unknown body found by lever, and result tested by balance. Find the weight of the lever itself.

Measurement of Time.—Pendulum: relation between the number of vibrations in a given time and the length of the pedulum. Period of vibration independent of mass of "bob," and—within moderate limits—of the arc of swing.

Barometer.—Determine the weight of one litre of air, under conditions existing in room, by boiling out the air in a flask containing water, &c. Construction of barometer. Effect of introducing air, water, &c., into the barometric column. Reading of barometer. Standard barometer.

Boyle's Law.—Investigation of the relation between the pressure and the volume of a gas. Proof that the product PV is constant at constant temperature. Curve exhibiting the relation P/V. Exercises on curve.

Heat.—Effect of increase of temperature on volume of given mass of solid, liquid, gas—qualitatively. Determine, as far as possible, whether expansion and contraction are regular or irregular. Regularity of expansion a means of determining *hotness* or temperature. The thermometer and its fixed points. Comparison of Centigrade and Fahrenheit thermometers. Conversion exercises unnecessary at this stage. Melting points: boiling points. Relation between boiling temperature and pressure (above and below atmospheric). Coefficients of expansion. Conductivity and comparison of conductivities from observation of the temperature of melting wax. Newton's law of cooling. Effect of the nature of the surface on the rate of cooling of a body. Rate of absorption of dull and bright surfaces. Quantity of heat. Specific heat. Measurement of the specific heat of metals and of liquids. Put a Centrigrade thermometer in a mixture of ice and water over a slow flame, and record the temperature every thirty seconds until the water has boiled for three minutes. Curve. The physical meaning of the horizontal parts of the curve. Effect of dissolving nitre and ammonium nitrate in water. Latent heat.

Should time permit, the Course may be extended into Mechanics, or into some *elementary* exercises on Sound or Light, or Magnetism and Electricity.

SECOND YEAR.—INTRODUCTORY CHEMISTRY.

The exact starting-point of the Second Year's work will depend on the extent of the First Year's Course. But the Second Year must be mainly devoted to Chemistry.

Laboratory work should begin with the observation of the apparent differences (form, colour, &c.) of some common and some laboratory substances.

The study of the Bunsen burner, and exercises on evaporation, solution, distillation, crystallization, and filtration would follow. Solubility; solubility as affected by temperature; solubility curves.

Action of Heat on the Metals.—Lead, zinc, copper, tin, magnesium, and iron: observe changes in appearance and weight.

Further Study of the Action of Heat on Iron.—Comparison of iron (bright) with rusted iron, to bring out (qualitatively) the physical differences. Bright iron easily converted into the dull earthy form. Conditions of rusting: in dry air? in moist air? in water free from air? Recall the experiments on density, and find accurately the density of iron and of iron rust. Weigh a quantity of iron fillings; rust in enclosed space; weigh again. Increase of weight due to? Test residual air, to bring out the alterations in volume and properties.

Do other metals rust: copper, lead, mercury? Recall previously ascertained results of action of heat on metals.

Try *Phosphorus.* Investigate what happens when phosphorus burns in air: alteration in phosphorus? alteration in air? Compare with "iron" results. Relative volumes of the active and inactive constituents of air. Preparation of the active constituent oxygen from chlorate of potash and from chlorate of potash and manganese dioxide; properties; oxides.

Action of Heat on Common Laboratory Substances.—Among others on common salt, blue vitriol, nitre, green vitriol, in this last case leading up to production of *Oil of Vitriol.*

Action of Oil of Vitriol on Common Salt and on Nitre.—Preparation of the three common acids. Qualitative study of caustic soda, caustic potash, and ammonia. Salts.

Action of Water and of Acids on Chalk.—Collection of gas evolved; examination of properties; measurement of volume, and weight of acid, obtained from one gram of chalk.

Action of Heat on Chalk.—Collection and examination of gas evolved; identify with that obtained from acid. Observation of the residue; lime, lime water. Lime water (an alkaline substance) and gas from chalk.

Burn carbon in oxygen. Carbonic acid gas and lime water. Identify carbonic acid gas with gas evolved from chalk.

Presence of carbonic acid gas in air. Synthesis of chalk.

Action of acids on *Carbonates.*

Action of Acids on the Metals.—Lead, zinc, copper, tin, magnesium, iron. Prepare, collect, and examine the inflammable gas obtained by treating zinc with dilute sulphuric acid. Burn the gas in air, and identify the product with water. Study of water. Further study of air.

In these exercises much scope will have been found for the use of the balance. For example, in comparing the properties of air, oxygen, and hydrogen, the weight of a litre of each under (*a*) laboratory, and (*b*) (by calculation) N. T. P. conditions should be found. Again, such exercises as finding the volume at N. T. P. (and, by calculation, the weight) of hydrogen displaced from (*a*) dilute sulphuric acid by 1 gram of zinc, (*b*) dilute sulphuric acid by 1 gram of magnesium, (*c*) dilute hydrochloric acid by 1 gram of magnesium, (*d*) strong hydrochloric acid by 1 gram of aluminium; the weight of (*a*) zinc required to displace 1 gram of hydrogen from dilute hydrochloric acid, (*b*) magnesium, &c., from dilute hydrochloric, (*c*) aluminium, &c., from strong hydrochloric acid: and the determination of the weight of oxygen which combines with 1 gram of hydrogen, would lead to much exactness in the use of the balance, and to such fundamental generalizations as the law of constant composition and of equivalents.

No attempt should be made to teach the Atomic theory, to write formulæ, or to give equations for reactions. The Course is intended to be an experimental one; but exercises in classification will arise under such headings as elements, compounds, oxides, carbonates, acids, alkalies, and so on.

The pupil will now be in a position to take up the study of one or more of the main branches of Physical or Natural Science; and it is intended that the work of the third year should be devoted to at least one such branch, and that of the fourth to another.

V.—COURSE IN DRAWING.

SUGGESTED SYLLABUS.

[NOTE.—The present Syllabus is issued merely as a guide to the kind of work that would be expected. Pupils would be allowed to take successive divisions of A in successive years; and a division of B might be taken in parallel with (or, after the first year, in exchange for) a division of A; but the divisions of A and B must be taken in the order given, and payments would not be twice made on the same division in the case of any one pupil.

In the first year of work under these Regulations, pupils who are qualified, may take up the Syllabus at any stage. But the payments will be those for the first year of the Course.

The Department intend to issue at an early date an illustrated Syllabus, with suggestions regarding the treatment of the different subjects.]

A.

I. Elementary Freehand Drawing, with the addition of simple exercises in Design. Drawing of Objects in Outline. Memory Drawing.

II. Continuation of Freehand in outline from Casts of Classic Ornament and from good examples of Celtic Ornament. Simple exercises in Design based on natural forms. Model Drawing from geometrical solids—cube, prism, cylinder, cone, pyramid, ring, vase—not more than two models and the board in one group. Object Drawing. Memory Drawing.

III. Drawing in Light and Shade from a Cast; or Modelling; or both.

IV. Design or Modelling; or both.

B.

I. PRACTICAL GEOMETRY.—The instruction may be limited to problems involving simple constructions in the following:—

(1.) Constructions required in geometrical pattern drawing, simple tracery, and mouldings.

(2.) Construction of regular polygons—general method. Inscribed and circumscribed circles. Simple cases of rectilinear figures described in or about other rectilinear figures.

(3.) Circles—passing through three points—touching three lines. Tangent lines and circles to one or two circles.

(4.) Construction of irregular polygons from given sides, angles, and diagonals. Similar figures—equal, enlarged, or reduced.

(5.) Plain scales and scale of chords. Proportional division of lines, including the mean, third, and fourth proportionals. Reduction of polygons to triangles of equal area. Construction of parallelogram or square equal to a given triangle or other rectilinear figure.

II. Practical Geometry. Plans, elevations, and vertical or horizontal sections of cubes, prism, pyramid, cone, and sphere in simple positions.

III. Application of I. and II. to common objects and to simple machine or building details. Drawing *from measurements made by the pupils themselves.*

IV. Solid Geometry.

1. The Principles of Projection. Definitions of terms in general use, such as ground line, or *xy* line, projector, plan, elevation, section, trace, planes of projection, &c.

2. Representation of a point in space, by its plan and elevation, in all possible positions with respect to the planes of projection.

3. Representation of vertical and horizontal lines.

4. Given the plan and elevation of a line, to determine :—

(*a*.) The traces of the line.

(*b*.) Its true length, and its inclination to each plane of projection. Conversely determine the projections of a line when its inclination to each of the planes of projection is given.

(*c*.) A new elevation of the line on any assigned ground line.

5. Determination of the real angle between two lines which meet.

6. Representation of parallel lines.

7. Simple problems relating to lines.

8. Representation of a plane by its traces.

(*a*.) At right angles to one plane of projection, and inclined at any angle to the other.

(*b*.) Perpendicular to both planes of projection.

(*c*.) Parallel to the ground line.

(*d*.) In any position with respect to the planes of projection.

9. Given the traces of a plane, to determine its inclination to each of the planes of projection.

10. Determination of the intersection of two given planes.

11. Determination of the intersection of three given planes.

12. Determination of the real angle between the traces of a given plane.

13. Determination of the angle between two given planes.

14. Determination of the intersection of a line and a plane.

15. Determination of the projections and real length of a perpendicular let fall from a given point on a given plane.

16. Determination of horizontal lines, and of lines of given inclination, in given planes.

17. Simple problems relating to planes.

VI.—COURSE IN MANUAL INSTRUCTION.

I.

A word or two may be necessary with regard to the reasons for encouraging the introduction of Manual Instruction into the curriculum of a Secondary School. The object aimed at here is not technical, but educational; not the knowledge of a craft, nor the acquisition of manual skill (though even the skill acquired will not be without its practical advantages), but intellectual and moral training.

In the trade workshop manual dexterity is the main object, and a young workman acquires skill and rapidity of execution by mechanical repetition of the same or similar exercises. The intellectual interest of the artisan and his pride of workmanship are qualities of the highest importance. The *aim*, however, of his daily work is not so much the stimulation of the one, and the cultivation of the other, as the sale, at market values, of the articles produced.

It is otherwise in a school. The stimulation and maintenance of the pupil's interest in his work are cardinal factors in any educational method or system, and it is claimed that Manual Instruction, more than any other subject of the school curriculum, serves this purpose. In many phases of schoolwork the pupil learns to repeat with precision what he is told or what he reads; he serves to transfer knowledge. His powers to retain and accurately transfer are thus tested. In many, too, his taste and judgment are called into play. But the productive faculty and the power of initiation have little exercise; and the scope for the pupil's individuality is normally but small. In wood or metal work, manual dexterity is cultivated, and great accuracy in working from dimensioned drawings is demanded. Imagination is called into play: the pupil must form a mental picture of the finished work, for errors cannot be retraced by a scratch of the pen or the use of a sponge. Again, the exercises are lengthy, requiring patience and perseverance; the objects made have artistic qualities which evoke a display of taste; choice of methods as well as eye-tests call for exercise of judgment; and, more than all, the pupil sees the work of his own hand and eye grow in concrete form—the active and productive mental attitude replaces the passive and receptive one.

In many respects Drawing and Practical Science make similar claims on the young mind; but the intrinsic value of Manual Training is that in this subject, more than in any other, the pupil realises the sense of individuality in his work. And this is the more true the less expensive the tools, and the less the machinery.

Again, Manual Instruction must be taken in conjunction with Drawing. Every "joint" must be worked from a previous drawing, made to scale. The realization in concrete form of plans, elevations, and sections gives a pupil an appreciation of solid in relation to plane figures invaluable in Advanced Geometry. Further, it is the experience of most schools, even where Manual Instruction is added to an already full programme of studies, that the efficiency of the ordinary school work is not only not diminished but actually increased.

II.

Drawing is an essential antecedent. The drawings should be made on paper (preferably in a book) and to scale, but not elaborated as drawings. The construction of the plane, chisel, and saw should be explained. In the first year, especially with younger boys, the actual sharpening of the tools should not be insisted on, but the methods of sharpening should be demonstrated. Some knowledge of the qualities of various kinds of wood is useful and necessary.

The work should be individual; under no circumstances would working in pairs be allowed. Correction of errors should not be premature. As far as possible the pupil should first make his own unaided effort. When failure does come, and explanation is necessary, the pupil should fully appreciate why he has failed; and the teacher should aim at securing his spontaneous assent to the suggested or necessary alterations in methods or practice. A room specially fitted up and devoted to the purposes of Manual Instruction is obligatory. Such a room, with places for twenty pupils working at the same time, may be fitted up and equipped for £60. Plans of typical rooms may be had from the Secretary.

NOTE.—The argument for Manual Instruction, so briefly stated above, is but a summary of the case so ably set out in—

(*a.*) The Report of the Commission on Manual and Practical Instruction (Government publication, C.—8923); and

(*b.*) The Report by J. Struthers, Esq., of the Scotch Education Department. (Government publication, C.—7705).

These publications should be studied by all interested in the subject.

III.—SYLLABUS.

First Year.

Setting out, sawing, planing, chiselling, and the working of the such exercises or "joints" as the following;—

Planing a square prism.
Planing an octagonal ruler.
Planing a hexagonal ruler.
Step notching.
Angular sawing: tesselated pattern.
Common geometrical forms.
Half-lap joint.
Open mortise and tenon.

Second Year

Half-lap dovetail.
The bridle joint.
Dovetail.
Mortise and tenon.
Angular halving on edge.
Angular dovetail halving.
"Cogged" or indenting joint.

The work may be varied by occasionally introducing the making of stands, &c., for physical or chemical appararatus. Such small objects as pen-trays, inkstands, frames, and simple brackets may also be made, so long as the character and aims of the instruction are steadily kept in view.

IV.

The following is a list of the tools which will, as a rule, be required for the working of the above exercises :—

List of Tools per Boy.

Jack plane.
Tenon saw.
Try square.
Marking gauge.
Pin hammer (8-oz. handled).
Mallet (square-eye, oval handle).
Screw-driver (5-inch oval handle).
Steel foot-rule (graduated).
Firmer chisels (one each—1″, ¾″, ½″, ¼″ strong).
Firmer gauges (½″, ¼″).
Marking awl.
Setting-out knife.
Smoothing plane.
Bench hook.

Additional List of Tools for each Group of Four Boys.

Mortise gauge (screw slide).
Sliding bevel (9-inch).
Pair compasses (6-inch winged).
Spokeshave (2½-inch beechwood).
Pair pincers (6-inch).
Pair Pliers.
Set 3 gimlets,
Set 3 bradawls.
Pair winding strips (1 inch by 1½ inches by ½ inch).
Straight edge (2 feet by 2 inches by ½ inch).
2 Mortise chisels.

Other Tools necessary for each Workshop.

2 Trying planes (17 inches).
1 Bow saw (10 inches).
1 Brace and set of bits.
3 Hand Saws (22 inches)
4 Oil stones in cases.
4 Oil cans.
2 12-inch try squares.
A grindstone.
1 Glue-pot.
4 Brushes for bench.

The Department has had drawings of typical laboratories and Manual Instruction rooms prepared, and will supply them to Managers of Schools who make application to the Secretary.

No. 6936/01.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

MEMORANDUM.

Borrowing Powers of County and Urban District Councils under Section 19 (5) of the Agriculture and Technical Instruction (Ireland) Act, 1899.

(1) County Councils.

The Department are advised that County Councils are empowered under Section 19 (5) (*a*) of the Agriculture and Technical Instruction (Ireland) Act, 1899, to borrow money for the following purposes:—

1. The building of technical schools.
2. Providing such schools with proper equipment and apparatus.
3. Purchase of land for:—
    - (i.) Sites for agricultural schools and colleges.
    - (ii.) Farms to be attached to new agricultural schools and colleges.
    - (iii.) Farms to be attached to existing schools and institutions.
    - (iv.) Experimental plots.
    - (v.) Tree-planting.

(2) Urban District Councils.

The Department are further advised that Urban District Councils may, under Section 19 (5) (*b*) of the same Act, also borrow money for the subjoined purposes:—

1. The building of technical schools.
2. Providing such schools with proper equipment and apparatus.
3. Purchase of land for sites required for the building of technical schools.

(3) Loans from the Board of Works.

It has been ascertained that the Commissioners of Public Works are, under Section 4 of the Act 61 & 62 Vic., cap. 54 (Public Works Loans Act, 1898), authorised to make loans for any of the above-mentioned purposes; but it must be clearly understood that the consent of the Local Government Board is necessary before a County or Urban District Council can exercise the borrowing powers conferred on them by Section 19 of the Agriculture and Technical Instruction (Ireland) Act, 1899.

Particulars as to the rates of interest chargeable on these loans can be obtained on application to the Secretary, Board of Works, Dublin.

The extent of the loan which can be made for providing the requisite fittings for technical schools appears to be a question that will have to be determined in every case by the Board of Works, after consultation with this Department, as it is understood that the existing practice of the Board is to advance money only for fittings which are fixtures.

Department of Agriculture
and Technical Instruction for Ireland,
Upper Merrion-street, Dublin.

May, 1901.

A
00-29.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

MEMORANDUM.

Powers and Procedure of Local Authorities under the Technical Instruction Acts, 1889 and 1891, and the Agriculture and Technical Instruction (Ireland) Act, 1889.

As a considerable misapprehension appears to exist in regard to the procedure to be followed by an Urban, a Rural, or a County Council in order to obtain approval for, and grants in aid of, Schemes for Agriculture and Technical Instruction, it has been considered advisable to set out in some detail the powers of the Councils, and their relations to one another under the Technical Instruction Acts, 1889 and 1891 (as modified by the Local Government (Ireland) Act, 1898), and under the Agriculture and Technical Instruction (Ireland) Act, 1899; and to suggest suitable action.

I.

It may be most convenient to state in the first place that the Department is advised that the following is the position of each Council under the Acts referred to:—

1. *The Urban District Council.*

(*a.*) Under the Agriculture and Technical Instruction (Ireland) Act, 1899, an Urban District Council may raise a rate not exceeding a penny in the £, on the rateable value of the Urban District, by means of or out of any rate or fund applicable for the purposes of the Public Health (Ireland) Act, 1878, appoint a Committee, frame a Scheme independently of the County Council, and submit it for the approval of the Department.

(*b.*) Under the Technical Instruction Acts, 1889 and 1891, as modified by the Local Government (Ireland) Act, 1898, an Urban District Council may, in concurrence with the County Council, or with their consent, act as Local Authority for the purposes of these Acts, raise a rate not exceeding a penny in the £, appoint a Committee, and frame a Scheme for Technical Instruction in their district. (See Local Government (Ireland) Act, 1898, Section 7).

(*c.*) An Urban Authority who had raised a rate and had had a Scheme in operation before the passing of the Local Government (Ireland) Act, 1898, may, as regards that Scheme, continue to exercise the powers conferred on them by the Technical Instruction Acts, 1889 and 1891, without the concurrence or consent of the County Council.

(*d.*) An Urban District Council may borrow money (see Section 19 (5) of the Agriculture and Technical Instruction (Ireland) Act, 1899) for the purpose of building Schools for Technical Instruction, and of providing them with proper equipment and apparatus.

2. *The Rural District Council.*

(*a.*) Under the Agriculture and Technical Instruction (Ireland) Act, 1899, no powers are given to a Rural District Council to raise a rate for the purposes of the Act. It is, however, competent for the Rural District Council to suggest action to a County Council. The County Council have power to raise a rate for the purposes of the Act of 1899; and this rate must be raised equally over the whole of the Rural Districts comprised in the county. (See Act of 1899, Section 19 (1)).

(*b*.) Under the Technical Instruction Acts, 1889 and 1891, as modified by the Local Government (Ireland) Act, 1898, a Rural District Council may, in concurrence with the County Council, or with their consent, raise through the County Council by means of their estimates and demands, a rate not exceeding a penny in the £. This rate may, under Section 19 (2) of the Act of 1899, with the consent of the County Council and with the approval of the Department, be applied for any of the purposes of Agriculture and other Rural Industries. These purposes are defined in Section 30 of the Act of 1899.

(*c*.) A Rural Sanitary Authority who had raised a rate and had had a Scheme in operation before the passing of the Local Government (Ireland) Act, 1898, may, as regards that Scheme, continue to exercise the powers conferred on them by the Technical Instruction Acts, 1889 and 1891, without the concurrence or consent of the County Council.

3. *The County Council.*

(*a*.) Under the Agriculture and Technical Instruction (Ireland) Act, 1899, a County Council can raise, by means of the Poor Rate, a rate not exceeding a penny in the £ equally over the whole of the Rural Districts comprised in the County, and can apply the sum so raised for the purpose of Agriculture and other Rural Industries. (Section 19 (1).)

(*b*.) The County Council are also a "Local Authority" within the meaning of the Technical Instruction Acts, 1889 and 1891 (see Local Government (Ireland) Act, Section 7), and may raise a rate not exceeding a penny in the £ for the purposes of these Acts. The rate raised for the purposes of these Acts in a Rural District, may, if the County Council think fit, and if the Department approve, be applied under the Agriculture and Technical Instruction (Ireland) Act, 1899, for any of the purposes of Agriculture and other Rural Industries. (See Sections 19 (2) and 30 of the Act of 1899).

(*c*.) The County Council are paramount unless in the exceptional cases already mentioned. (See Local Government (Ireland) Act, 1898, Section 7, and Agriculture and Technical Instruction (Ireland Act, 1899, Section 19). That is to say, the County Council have controlling power, within the limits prescribed by the Acts, over the sums to be raised, and the purposes to which such sums are to be applied.

(*d*.) Where a County Council proceed under the Technical Instruction Acts, 1889 and 1891, the expenses of the Council under these Acts are county-at-large or district charges as they may direct. (See Local Government (Ireland) Act, 1898, Section 74).

A County Council may borrow money (see Section 19 (5) of the Agriculture and Technical Instruction (Ireland) Act, 1899) for the purpose of building Schools for Technical Instruction, and of providing them with proper equipment and apparatus.

II.

1. In exceptional cases the Department may approve of a Scheme submitted independently by an Urban District Council. But, as a rule, the Urban District Council or Rural District Council who desire to obtain the advantages of the Technical Instruction Acts, 1889 and 1891, or of the Agriculture and Technical Instruction (Ireland) Act, 1899, should (*a*) resolve that it is desirable to take advantage of these Acts; (*b*) appoint a Committee for the purposes of the Acts; (*c*) come

to a decision as to the amount of rate it is desirable to raise, stating the Acts under which, and the purposes for which, the rate is to be raised; (*d*) inform the County Council accordingly, requesting that body to take the necessary steps, and (*e*) prepare a Scheme, which should be submitted to the County Council.

2. Where only certain of the Urban or Rural District Councils within the administrative area of a County are anxious to take advantage of the Acts, the County Council may consent to these Councils proceeding under the Technical Instruction Acts, 1889 and 1891, in which case the rate may be levied over these districts only.

3. The County Council should appoint their Committee in terms of Section 14 (1) of the Agriculture and Technical Instruction (Ireland) Act, 1899, should have the rate raised under the Technical Instruction Acts, 1889 and 1891, as modified by the Local Government (Ireland) Act, 1898, or under the Agriculture and Technical Instruction (Ireland) Act, 1899, or under both, as circumstances may require; and on receipt of Schemes from the District Councils, should frame a General Scheme for their administrative area and submit it to the Department for approval.

III.

In connection with the framing of Schemes attention is directed to Section 14 (2) of the Act of 1899, from which it will be seen that "Any two or more public bodies may, subject to the regulations of the Department, appoint a Joint Committee for this part of the Act, &c."

Again, in connection with the raising of rates it may be advisable to quote here Articles LXXXVI (*a*) and LXXXVI (*b*), p. 62, of the current Science and Art Directory of the Board of Education, South Kensington:—

LXXXVI (*a*). "Grants will be made in Ireland in aid of Technical Instruction given under the Technical Instruction Act, 1889 (52 & 53 Vict.).

LXXXVI (*b*). "The grant in aid will be made to the School aided by the Local Authority, and will be equal in amount to the sum contributed by the Local Authority out of the rates for instruction in subjects other than those for which the Board gives aid under the Science and Art Directory; provided that the subjects of instruction have been approved by the Board; that the School is open to the public; that the premises are suitable for the purposes of the instruction to be given; and that the Inspector of the Board reports satisfactorily upon the qualifications of the teachers and the instruction given."

In all cases where a rate not exceeding a penny in the £ is to be raised, it would seem advisable to proceed under the Technical Instruction Acts, 1889 and 1891; but should it be desirable to raise a rate exceeding a penny in the £, it will be necessary to raise a portion not exceeding a penny in the £, under the Technical Instruction Acts, 1889 and 1891, and the remainder under the Agriculture and Technical Instruction (Ireland) Act, 1899. In no case must the combined rate exceed two pence in the £.

Further, there will be available from the Science and Art grants (which will be administered by this Department after 1st April, 1901, and for which, in the meantime, application may be made through this Department), a grant, on certain conditions, towards the purchase of school fittings of special construction, and of apparatus, diagrams, &c.—the grant not to exceed half the cost.

DEPARTMENT OF AGRICULTURE
AND TECHNICAL INSTRUCTION FOR IRELAND,
UPPER MERRION-STREET, DUBLIN.
December, 1900.

LIST OF SCIENCE AND ART SCHOOLS AND CLASSES.

Name of School.	Name and Address of Secretary.
ANTRIM:	
Antrim: Orr Memorial School,	W. R. Davidson, Esq , M.D., Wellington-street, Ballymena.
Ballymena Art and Technical Class Rooms.	W. R. Davidson, Esq., M.D., Wellington-street, Ballymena.
Belfast: Government School of Art,	J. M. Small, Esq., Government School of Art, Belfast.
Belfast: Model School,	R. G. Watt, Esq., 77A, Victoria-street, Belfast.
Belfast Royal Academy.	Rev. W. J. Jackson, M.A., Royal Academy, Belfast.
Belfast Royal Academical Institution,	E. J. Dowdall, Esq., Royal Belfast Academical Institution, Belfast.
Belfast: St. Enoch's Schools,	Miss C. Simpson, 76, Pakenham-place, Belfast.
Belfast: Victoria College,	J. M. Small, Government School of Art, Belfast.
Belfast: Working Men's Institute,	S. F. Milligan, Esq., Bank Buildings, Belfast.
Belfast: Y. M. C. A., Mount Pottinger,	Miss C. Simpson, 76, Pakenham-place, Belfast.
Lisburn: Convent of the Sacred Heart of Mary.	Sister Mary P. Maguire, Convent of Sacred Heart of Mary, Lisburn.
Lisburn: Ulster Provincial School,	F. Bell, Esq., Parkville, Lisburn.
ARMAGH:	
Armagh Natural History and Philosophical Society's New Art Rooms.	W. H. Tighe, Esq., Ulster Bank, Armagh.
CLARE:	
Cahirmurphy National School,	T, Daly, Esq., Kilmihil, Co. Clare.
Ennis: Christian Brothers' Schools,	C. J. Hassett, Esq., Lifford, Ennis.
Ennis: Convent of Mercy,	Mrs. Mary C. Kelly, St. Mary's School, Convent of Mercy, Ennis.
Lacken National School,	Rev. J. M'Donnell, Kilmihil, Co. Clare.
CORK:	
Bantry: Convent of Our Lady of Mercy,	Rev. P. M'Sweeney, Main-street, Bantry.
Blackrock: Ursuline Convent,	Mrs. M. Barry, Ursuline Convent, Blackrock.
Charleville: St. Joseph's Convent of Mercy.	Sister M. F. Russell, Convent of Mercy, St. Joseph's, Charleville, Co. Cork.
Clonakilty: Convent of Mercy,	Mrs. M. P. Marmion, Convent of Mercy, Clonakilty, Co. Cork.
Cork: Christian Brothers' College, **(and School of Science).**	D. F. Giltinan, Esq., Municipal Buildings, Albert-quay, Cork.
Cork: Christian Schools, Our Lady's Mount **(and School of Science).**	D. F. Gilinan, Esq., Municipal Buildings, Albert-quay, Cork.
Cork: Crawford Municipal Technical Institute.	F. B. Giltinan, Esq., Crawford Municipal Technical Institute, Emmet-place, Cork.
Cork: Grammar School,	G. Harrison, Esq., 108, Patrick-street, Cork.
Cork: High School for Girls,	G. Harrison, Esq., 108, Patrick-street, Cork.
Cork: St. Vincent's Convent National School.	Mrs. A. Lynch-Staunton, St, Vincent's Convent, St. Mary's-road, Cork.
Cork: Rochelle Seminary,	Rev. Canon D. H. Powell, D.D., St. Mary's, Shandon Rectory, Cork.
Cork: Ursuline High School, St. Angela's,	Mrs. E. Foley, Ursuline High School, St. Angela's, Cork.
Dunmanway: St. Mary's Schools,	Sister V. O'Brien, St. Mary's, Dunmanway, Co. Cork.
Kinsale: Convent of Mercy,	Mrs. M. P. Egan, Convent of Mercy, Kinsale.
Midleton: Christian Brothers' Schools,	Rev. J. C. Ryan, The Monastery, Midleton, Co. Cork.
Mitchelstown: Christian Brothers' Schools.	R. A. Sheedy, Esq., Christian Schools, Mitchelstown.
Rochestown: Franciscan Capuchin College.	T. P. Travers, Esq., A.M.I.C.E., Rockborough House, Cork.
Youghal: Presentation Convent,	Mrs. M. J. Power, Presentation Convent, Youghal.
DOWN:	
Banbridge: Temperance Hall,	Joseph Walker, Esq., 19, Reilly-street, Banbridge.
Newtownards: Castle Gardens National School.	J. Neill, Esq., Castle Gardens, Newtownards

Name of School.	Name and Address of Secretary.
DUBLIN:	
Balbriggan: Loreto Convent,	Mrs. M. M'Namara, Loreto Convent, Balbriggan R. S. O.
Blackrock: Dominican Convent, Sion Hill.	Sister M. Bernard, Sion Hill Convent, Blackrock.
Cabra: St. Mary's Dominican Convent,	Mrs. A. C. Murphy, St. Mary's Dominican Convent, Cabra.
Dalkey: Art School, Bay View,	Mrs. M. Murphy, Loreto Abbey, Dalkey S. O.
Dalkey: Loreto Abbey,	Mrs. J. Ryan, Loreto Abbey, Dalkey S. O.
Dublin: Alexandra College,	Rev. T. R. S. Collins, B.D., 65, Pembroke-road, Dublin.
Dublin: Belvedere College,	Rev. N. J. Tomkin, S.J., Belvedere College, Great Denmark-street, Dublin.
Dublin: Christian Brothers' Novitiate, Marino.	Rev. Br. J. C. Whitty, Christian Brothers' Novitiate, Marino.
Dublin: City of Dublin Technical Schools,	Arnold Graves, Esq., City of Dublin Technical Schools, Lower Kevin-street, Dublin.
Dublin: Dominican Convent, Eccles-street.	Miss T. O'Sullivan, 19, Eccles-street.
Dublin: Loreto Convent, North Great George's-street.	Mrs. Mary Corcoran, Loreto Convent, 43, North Great George's-street.
Dublin: Loreto Convent, St. Stephen's-green.	Mrs. M. G. Reddin, Loreto Convent, 53, Stephen's-green, E.
Dublin: Mechanic's Institute,	M. Dobbin, Esq., Mechanic's Institute, Lower Abbey-street.
Dublin: Railway Institute,	G. D. M. Beard, Esq., 3, St. Michael's-terrace, South Circular-road, Dublin.
Dublin: St. Margaret's Hall, Mespil-road,	Mr. French, 9, Dartmouth-square, Dublin.
Dublin: St. Mary's University College,	Sister M. J. Keighron, St. Mary's University College, Muckross Park, Donnybrook.
Dublin: University College, St. Stephen's-green.	Henry C. M'Weeney, Esq., F.R.U.I., University College, St. Stephen's-green.
Kingstown: St. Mary's Dominican Convent.	Rev. E. D. Byrne, St. Mary's Convent, Kingstown.
Rathfarnham: Loreto Abbey,	Mrs. M. O'Reilly, Loreto Abbey, Rathfarnham.
Rathmines: Hibernian Marine School,	C. Dickinson, Esq., Grove House, Rathmines.
Rathmines: Loreto Convent, Charleville-road.	Mrs. M. Boylan, Loreto Convent, Charleville-road, Rathmines.
Ringsend: Pembroke Technical Schools,	Arnold Graves, Esq., Cambridge-road, Ringsend.
Sandymount: Academical Institution,	C. E. M'Gillivray, Esq., 61, Park-avenue, Sandymount.
Terenure: Carmelite College,	Rev. J. L. M'Cabe, Carmelite College, Terenure.
GALWAY:	
Galway: City of Galway Technical Institute.	Very Rev. P. J. Lally, St. Joseph's, Galway.
Galway: City of Galway Technical School.	Very Rev. P. J. Lally, St. Joseph's Galway.
Galway: Dominican Convent, Taylor's-hill.	Sister M. Michael Morris, Dominican Convent, Taylor's Hill, Galway.
Gort: Convent of Mercy,	Patrick F. Nilan, Esq., J.P., Lavally, Gort, Co. Galway.
KERRY:	
Kenmare: Convent of Poor Clares,	Mrs. A. M'Carthy, Convent of Poor Clares Kenmare, Co. Kerry.
Killarney: Loreto Convent,	Mrs. M. Peart, Loreto Convent, Killarney.
Killarney: Presentation Convent,	Mrs. M. B. Moran, Presentation Convent, Killarney.
Listowel: St. Michael's College,	D. Nolan, Esq., William-street, Listowel, Co. Kerry.
Tralee: Presentation Convent,	Sister Mary Counihan, Presentation Convent, Tralee.
KILKENNY:	
Kilkenny: Christian Brothers' Schools,	J. Brennan, Esq., Court House, Kilkenny.
Kilkenny: Pococke College,	Rev. F. J. Hartley, A.B., William-street House, Kilkenny.
LIMERICK:	
Hospital: Presentation Convent,	Mrs. M. de P. Gubbins, Presentation Convent, Hospital, Knocklong R. S. O., Limerick.
Kilfinane Classical and Civil Service School.	Rev. J. Carrick, Kilfinane, Co. Limerick.
Limerick: Municipal School of Science and Art.	W. M. Nolan, Esq., Town Clerk, Limerick.

Name of School.	Name and Address of Secretary.
LONDONDERRY :	
Eglinton : Carmoney National School,	Rev. S: Semple, M.A., Eglinton, Londonderry.
Londonderry : Christian Brothers' Schools,	Rev. Br. J. A. Murray, Brow of the Hill, Londonderry.
Londonderry : School of Science and Art,	J. A. Williams, Esq., School of Science and Art, Londonderry.
LOUTH :	
Drogheda : Sienna Convent,	Sister M. M. D'Arcy, Sienna Convent, Drogheda.
Dundalk : Educational Institution,	Max Hesse, Esq., Crowe-street, Dundalk.
Dundalk : Railway Works Class Room,	Max Hesse, Esq., Crowe-street, Dundalk.
MAYO :	
Ballina No. 2 Male National School,	Rev. J. Naughton, Ballina, Co. Mayo.
Ballina : St. Murdoch's Seminary,	Rev. B. M. Quinn, Ballina, Co. Mayo.
Kiltimagh : St. Louis Convent,	Rev. W. Henry, Kiltimagh, Co. Mayo.
QUEEN'S COUNTY :	
Abbeyleix : Preston School,	S. Leigh, Esq., Beechfield, Abbeyleix.
Portarlington : Collegiate School,	Rev. J. F. Cole, The Rectory, Portarlington.
ROSCOMMON :	
Boyle Academical Institution,	Rev. J: Watson, M.A., The Manse, Boyle, Co. Roscommon.
SLIGO :	
Sligo Ursuline Convent,	Sister Isabella Lyster, Ursuline Convent, Sligo.
TIPPERARY :	
Nenagh : Christian Brothers' Schools,	E. Flannery, Esq., 15, Queen-street, Nenagh.
Thurles : Christian Brothers' Schools,	J. O'Brien, Esq., Main-street, Thurles,
Thurles : Presentation Convent,	Sister A. Hanly, Presentation Convent, Thurles.
Thurles : Ursuline Convent,	Sister M. de P. O'Connell, Ursuline Convent, Thurles,
TYRONE :	
Dungannon Royal School,	J. W. Leebody, Esq., B.E., County Surveyor, Dungannon.
Omagh : High School,	Rev. A. Macafee, The Manse, Omagh, Co. Tyrone.
WATERFORD :	
Waterford : Christian Brothers' College, Waterpark.	J. Walsh, Esq., 35. The Mall, Waterford.
Waterford : Convent of the Sacred Heart of Mary, Ferrybank.	Mrs. E. Kean, The Convent, Ferrybank, Waterford.
Waterford : De La Salle Training College,	The Rev. The Principal, De La Salle Training College, Newtown House, Waterford.
Waterford : Newtown School,	E. B. Jacob, Esq., Beechwood, Lower Newtown, Waterford.
Waterford : School of Art,	J. Robertson, Esq., 53, Quay, Waterford.
Waterford : Ursuline Convent,	Sister Agnes M. Walsh, Ursuline Convent, Waterford.
WESTMEATH :	
Athlone : Ranelagh School,	Rev. R. Watson, B.D., The Manse, Athlone.
Athlone : St. Mary's School,	Rev. T. Langan, D.D., St. Mary's, Athlone.
WEXFORD :	
Gorey : Loreto Abbey,	Mrs. M. C. Murray, Loreto Abbey, Gorey.
New Ross : Good Counsel College,	J. Colfer, Esq., Priory-street, New Ross.
Wexford : Loreto Convent,	Sister M. O'Leary, Loreto Convent, Wexford.
WICKLOW :	
Bray : Loreto Convent,	Sister D. O'Shaughnessy, Loreto Convent, Bray.
Bray : Loreto Convent, St. Patrick's National School.	Sister D. O'Shaughnessy, Loreto Convent, Bray.
Wicklow : Dominican Convent,	Sister M. M. Conran, Dominican Convent, Wicklow.

LIST OF TECHNICAL SCHOOLS IN IRELAND WHICH RECEIVED GRANTS UNDER THE TECHNICAL INSTRUCTION ACT, 1889.

TUAM.—Technical School, Mercy and Presentation Convent and Christian Brothers School.

DUBLIN.—Royal Irish Association for Promoting the Training and Employment of Women, 21, Kildare-street.

„ City of Dublin Technical Schools, Lower Kevin-street.

„ Pembroke Technical School, Ringsend

CORK.—Schools of Music, 8 Morrisson's Island.

„ Crawford Municipal Schools of Science and Art, Technical Schools, Nelson-place.

BELFAST.—Technical School, Hasting's-street.

„ Royal Belfast Academical Institution, College-square, North.

LIMERICK.—Municipal Technical School, Upper Cecil-street.

GORT.—Convent Technical School.

CASHEL.—Presentation Convent National School Technical Class.

GALWAY.—City of Galway Technical Institute.

CLAREMORRIS.—Convent Schools, Mount St. Michael's.

PORTUMNA.—Convent of Mercy Technical School.

FISHERIES.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

SPECIAL MARKET REPORT ON THE PICKLED MACKEREL AND HERRING TRADE IN THE UNITED STATES.

⁂ NOTE.—*With a view to obtaining full and trustworthy information as to the extent and conditions of the market for* PICKLED MACKEREL *and* PICKLED HERRING *in the United States, the Department of Agriculture and Technical Instruction for Ireland sent Mr. Alexander T. Duthie, in June, as an Expert Commissioner, to investigate the position and prospects of the trade on the spot. Mr Duthie, in the course of his inquiries, visited New York, Boston, Philadelphia, and has furnished the Department with the annexed Report. Mr. Duthie is the Fish Trade Expert of the Congested Districts Board, and the Department are under obligations to that Board for their courtesy in lending his services for the purposes of the present investigation.*

In accordance with instructions received from the Department of Agriculture and Technical Instruction for Ireland, and by permission of the Congested Districts Board for Ireland, I proceeded to the United States of America, leaving Queenstown on the morning of 2nd June, and visited New York, Boston, Philadelphia, and Chicago, where I made inquiries as to the sale of pickled mackerel and herrings, and now beg to submit my report.

As the American market for the sale of mackerel is quite distinct from that for the sale of herrings, I shall deal separately with each class of fish.

THE TRADE IN PICKLED MACKEREL.

Pickled mackerel is consumed almost entirely by the working and poorer classes of Americans, and it is spoken of as an article for "Domestic Consumption." There is a great demand for it, and very large quantities can be disposed of. The successful mackerel fishings that were made on the Atlantic coast up till about fifteen years ago were mostly disposed of in a salted state, and as the fish were spread all over the country at moderate prices, a large trade was established, and although since then, owing to the falling off of the American coast fishings, prices have gone very much higher, the trade still remains a most important one.

Previous to the end of season 1885, American pickled mackerel sold as low as three and four dollars per barrel, while one year later (1886), when the fishing fell off, prices rose to 12½ dollars per barrel. Since then prices have varied (according to the supply and demand), from eight to about twenty dollars per barrel.

During the last twenty-two years the number of barrels cured in each year on the American coast was as follows :—

1879,	220,599	barrels.
1880,	349,674	,,
1881,	291,657	,,
1882,	378,863	,,
1883,	226,685	,,
1884,	478,076	,,
1885,	329,943	,,
1886,	79,998	,,
1887,	88,382	,,
1888,	48,205	,,
1889,	21,918	,,
1890,	19,042	,,
1891,	47,316	,,
1892,	51,368	,,
1893,	55,637	,,
1894,	46,321	,,
1895,	24,939	,,
1896,	77,464	,,
1897,	about 70,000	,,
1898,	13,154	,,
1899,	14,286	,,
1900,	23,468	,,

The present season in America.

It is evident from the fact that mackerel is the poor man's fish that high prices curtail the demand, while at moderate prices large quantities can be disposed of. During the month of June, 1901, a good catch of summer pickled mackerel (amounting to about 25,000 barrels) was landed at Gloucester and Boston. These fish were large sized, running from 200 to 250 to the barrel. They were, however, in poor condition, being thin in the fish and spent. They were selling at from 7½ dollars to 8 dollars per barrel. Recently the quality seems to have somewhat improved, the fish showing some fat, but prices remain the same. Although the present catch of summer mackerel is larger than that of last year, it is not expected to interfere much with the sale of good autumn cured mackerel.

Irish pickled mackerel has been successfully handled or marketed in America during the last ten or twelve years, and prices have varied according to the supply and demand from 9 to 18 dollars per barrel for well cured fish packed in good barrels.

There was very little of last autumn cured Irish mackerel remaining unsold at the time of my inquiry, and what was left was held in firm hands. Some small lots of spring cured Irish mackerel arrived in June, and were put in the market at prices from 10 to 10½ dollars per barrel. Like the American early cured mackerel, the Irish spring cured are thin in the fish and not of good keeping quality. These prices correspond favourably with what is being paid for similar (out of season) fish caught on the American coast.

New York, Boston, and Philadelphia are the principal markets for pickled mackerel, and being all seaports, Irish mackerel is imported direct into each. The leading firms in the trade in these cities report a very marked improvement in the cure of Irish mackerel during recent years, although some parcels of badly cured fish, and packed in inferior barrels, occasionally arrive. These are difficult to sell, and must be disposed of at low prices. Dry barrels containing rusty fish are frequently to be met with in almost every consignment. The careless manner in which some of the steamers are said to load and discharge the barrels will, no doubt, in part account for this; but if strong new barrels are filled, and these carefully coopered before being shipped, there will be less risk of the consignments containing dry barrels.

Some of the merchants suggested that a more careful selection of Irish mackerel should be made—to have, say, three selections, viz.:

No. 1. To contain only the best fish, about 250 to the barrel.
No. 2. To contain about 300 to the barrel.
No. 3. To contain over 300 to the barrel.

They also urged that it was very important that the barrels should contain 200 lbs. of fish on their arrival. With this object in view, when packing the barrels some allowance should be made for shrinkage which is apt to take place, especially if the fish are packed before they have entirely taken in the salt. It is better for the sale of the barrels that the fish weigh a few lbs. over rather than anything under 200 lbs. The best Irish curers make this provision.

The Market in Chicago.

Chicago is a most important market for the sale of all kinds of fish. It is about 1,000 miles west of New York, and is in the centre of an area having a population numbering 40,000,000 within a radius of 500 miles. It is the great market of the West, and the city itself contains such a mixed population (about 2,000,000) of various nationalities, that all kinds of fish can be sold in it. There is a large sale for pickled mackerel, and many thousands of barrels are disposed of yearly, while the demand and sale seem to increase every day. Irish mackerel are well known in Chicago, and all the leading wholesale grocers and provision merchants on whom I called had some in stock. Complaints were frequently made as to the poor condition in which the fish often arrived, the barrels being dry and the fish rusty. No doubt the long transport from New York, Philadelphia, or Boston to Chicago accounts, in a great measure, for the poor condition in which the barrels frequently arrive; but, having regard to the distance, mackerel for Chicago should be sent only in new and strong barrels. From any of those seaports Irish mackerel can be sent direct from the steamer by rail to Chicago. The freight by rail is about 1 dollar per barrel.

There is another route to Chicago, by the "Lake Service," during the summer months, when the navigation is open. The rate of freight by this route is somewhat less than by rail direct, but the transit takes much longer time, and the injury done to the barrels by frequent transhipment is often very serious. Merchants prefer to have the mackerel sent direct by rail. The barrels could be consigned direct from Ireland to Chicago, and on their arrival there cleared at the Customs, and so avoid this process being gone through at any of the seaports.

In some of the stores visited there were some old barrels, containing mackerel, which were not fitted for the long journey, and, consequently, the fish were not in good condition. On the other hand, there were some new barrels, made of Swedish spruce, that were sound and in good condition, the fish in them, although so late in the season, were clear and bright, as if newly packed. Complaints were also made as to the frequent ragged and torn appearance in the splitting of Irish mackerel, and the dark colour it often shows, which contrasts unfavourably with the American, but especially with the Norwegian mackerel. It being the end of the season it is probable that some of the worst consignments remained, but the complaints were so general that there was, doubtless, some cause for them. I am not aware whether any mackerel is sent direct from Ireland to Chicago, or whether it is purchased from agents at any of the American seaports, but having regard to the importance and immense resources of Chicago, and the opportunity which it seems to afford of developing a much larger outlet for Irish mackerel, it would be to the curers' interests to give this market special attention. In preparing fish for the Chicago market curers should endeavour, as far as possible, to fill only new and sound barrels with mackerel, and such as will retain the pickle and carry the fish there in good condition.

Chicago merchants give the barrels every care and attention on their arrival. They have all got underground cellars in connection with their stores, into which the barrels are put, and should they at any time have larger stocks than their cellars will hold, they put these into "cold stores," of which there are many in Chicago. The merchants usually buy their supplies through an importing agent, although at times some of them buy direct when it suits them to do so. If a direct trade in mackerel were opened up between Ireland and Chicago the Chicago merchants would, it was stated to me, prefer buying free on board, either at Liverpool or Glasgow, according to samples which could be sent them.

There is at present a regular market for Irish mackerel in America, the size of the fish being suitable for retailing, and when it is well cured and of good quality it is relished by the consumers. I made careful inquiries at some of the leading dealers and importers as to the probable effect that the present summer mackerel fishing on the American coast might have on the sale of Irish-cured autumn mackerel. They all said that so far the catch has not been so great as to interfere with the sale of good Irish fish, and that unless such heavy fishings as were got previous to 1886 should again set in, Irish mackerel will always sell at fair prices. So far America has been the only market for Irish pickled mackerel, and curers in Ireland should use every endeavour to cure their fish so as to suit the American taste. The fish should be carefully split and seamed as soon as possible after they have been caught. Special care should be given as to the washing and salting, and the mackerel should be packed in new and sound barrels. The more attention that is paid to this the more readily will mackerel sell and obtain higher prices.

As regards the pickled mackerel trade in the United States, I may point out that this trade originated and developed in the States, and that up to and including the year 1886 no pickled mackerel were sent to America from either Norway or Ireland. In the years 1884 and 1885 the number of barrels of mackerel cured in America was 478,000 and 330,000 respectively, while in the year 1886 only 80,000 barrels were cured. This falling off in the American fishing caused the starting of the pickled mackerel trade in Ireland and Norway; but even with the exports from these countries the consumption in America is very much less than it was in 1885 and previous years. As, however, the pickled mackerel trade from Norway and Ireland was created by the falling off of the American mackerel fishing, a revival of the

American fishing would, owing to the heavy import duty, practically mean the extinction of the mackerel curing in Norway and Ireland for the American market, which at present is the only available one for that class of fish, and on that account it should always be borne in mind that this industry has an uncertain and precarious future. For the present what is needed is more careful curing of the fish, and the use of only good strong staunch barrels, proof against leaking.

The Trade in Picklen Herrings.

While pickled mackerel are consumed chiefly by Americans, pickled herrings are almost entirely consumed by other nationalities, such as Germans, Scandinavians, and Hebrews.

In Philadelphia and Boston the sale of herrings is a limited one, owing to the population being largely American, while in New York and Chicago, with their mixed populations, the sale is both an important and extensive one.

The consumption and sale of herrings in New York, especially of Scotch and Irish herrings, have made rapid progress during the past few years. About fifteen years ago the quantity of Scotch herrings sent to New York scarcely amounted to 500 barrels yearly, whilst during last year the importation of herrings from Scotland and Ireland amounted to about 35,000 barrels. Of this quantity it is estimated that from 6,000 to 7,000 barrels were sent from Ireland, chiefly from the Donegal coast. I was pleased to find that these herrings have attained the same high position in the herring market that the Norwegian mackerel occupy in the mackerel market. While the prices paid in New York last year for prime Scotch herrings ranged from 9 to 12 dollars per barrel, the Donegal herrings were sold at prices from 11½ to 13½ dollars per barrel.

Irish Herrings in New York.

Of the firms who largely import Donegal herrings one reports that "the reason why the herrings from the Donegal districts were so much more favoured above the Scotch cures is a fact that these herrings are so much whiter in the meat, and the fact that some of the curers in the Donegal stations are known to be extremely careful in their cure, selection, and packing, so that their brands are bought with a great deal of confidence. It is our opinion that increasing quantities of Irish herrings equal, or about equal, in qualities to the Donegal, will be very easily saleable in this market, and that they will command the best of prices. Of course, the prices will also depend greatly upon the supply and demand, but higher prices will at all times be paid for herrings from these districts, or herrings equal to them than will be paid for herrings from any other countries." Another firm reports on Irish herrings, that "there has been a good demand for these, and it will increase every year. Some of them were specially choice large fat herrings, while the others were nice goods. These goods have a flavour which is preferred by the majority of the trade to Scotch herrings."

All the Irish herrings that have been shipped to America have been imported into New York, where they have been all sold to consumers who are entirely Jews of the poor class. This class of Jews live exclusively together in a district of the city known as the "Jewish Quarters," and they are estimated to number at least half a million.

They are great consumers of herrings, and frequently use them at every meal, when they can be procured. They are expert judges of both the quality and cure of herrings, and buy the best that can be got, for which they always have to pay the highest prices. The herrings are sold by importing firms to the small retail merchants, who are all Hebrews, and the retail business is conducted in their own language.

Herrings from Norway, &c.

Large quantities of Norwegian and Dutch herrings are also imported into New York. These sell at lower prices than Scotch herrings, and, in addition to the Jews, they are also consumed by Germans and Scandinavians.

During the past season about 2,000 barrels of Newfoundland herrings, cured in the Scotch style, were sent to New York. They were large full herrings, and were sold at from 8 to 9 dollars per barrel. The probability is that supplies from Newfoundland will increase, and in course of time they may seriously compete with the sale of Scotch and Irish herrings.

Herring Market in Chicago.

There is an extensive market for salted herrings in Chicago, but so far the trade has been almost entirely in the hands of Dutch and Norwegians, who between them import from 30,000 to 40,000 barrels yearly. Herring merchants from Holland and Norway frequently visit Chicago and keep themselves posted up as to the requirements of their various customers, and strive, as far as possible, to cure the herrings to suit their tastes. The Dutch seem to give special attention to this, and they send their herrings in various different sizes of barrels and kegs, containing from 6 lbs. of fish up to the ordinary Dutch herring barrel, which is similar in size to a Scotch barrel. All the leading wholesale grocers and provision merchants deal in Dutch and Norwegian herrings. They are sold at lower prices than what the Scotch and Irish herrings realise in New York, and they seem to be largely bought by Germans and Scandinavians, as well as by Jews.

Both the Dutch and Norwegian herrings are well cured. The Dutch are a medium-sized plump fish. Some of the Norwegians are large and really good herrings, while others, although large, are a coarser fish; the one being fat, or summer herrings, and the other winter herrings. There are also mediums from Norway of a similar size to the Dutch herrings. Some Newfoundland herrings have also readily Chicago, and, being offered at moderate prices, they were readily bought up, and seem to have given satisfaction to the consumers.

Scotch herrings have recently been imported into Chicago, and were bought solely for the Jewish trade, as they are said to have been "too expensive for other buyers." The Jews live in a district by themselves in Chicago similar to that of New York, and their business is carried on under much the same conditions. The large provision merchants of Chicago have not dealt in Scotch herrings, and, so far as I could learn, Irish herrings have never yet reached Chicago. From the fact that Chicago contains a large Hebrew population, considerable quantities of Irish herrings could be disposed of at much the same prices as in New York.

There would be an extra freight incurred in sending herrings from any of the seaports by rail to Chicago. A barrel of herrings is heavier than a barrel of mackerel, and on account of this the railway charges would be rather more than a dollar per barrel. Chicago merchants would, I am told, prefer to buy herrings free on board at either Glasgow or Liverpool, according to samples which could be sent them.

Need of Care in the Curing.

Continued care in the selection and cure of herrings should be exercised by Irish herring-curers. The herrings should be neatly gutted, carefully roused, and packed on their backs in the barrels. Just sufficient salt to cure the herrings should be used, and no salt should remain undissolved in the barrels after the herrings are cured. The "filling up" of the barrels should be specially attended to. After sufficient time has been allowed for the fish to "pine" in the salt the barrels should be firmly filled, and great taste and skill shown in making a nice finish on the top rows of the herrings so that when the barrels are opened the herrings will have an attractive appearance. These are essential points to be attended to in curing for the American market, but the herrings must also be packed in new sound barrels that will retain the pickle, so that when they arrive at the other side the herrings will be in good condition.

In summing up the information I obtained about the Irish pickled herring trade in the United States, I am able to state that it is on a firmer basis than the Irish trade in pickled mackerel which, as before mentioned, depends upon the existence of a light fishing of mackerel in America. There is not any herring fishing off the United States coasts, so that the increasing demand for pickled herrings in America must be supplied by export from Europe, and, to a small extent, from Newfoundland. The demand for pickled herrings in America is of recent growth, and is largely attributed to the increased number of emigrants who have arrived there during the past years from Eastern Europe, and have introduced their taste for pickled herrings; that part of Europe, as is well known, being one of the best markets for pickled herrings. The Jews are now the principal buyers of pickled herrings in America, and the trade is very largely in the hands of Hebrew merchants.

The very best herrings of the best cure and condition find the most ready sale in the American market, and it is useless for shippers to think they can export profitably to America any inferior fish, or any fish, however good, unless they are well cured, and made to suit the taste of the purchasers, and carefully and attractively packed in the best of barrels. The herrings recently exported from Ireland have taken the first place, and obtained by far the highest prices in the American market, owing to their being of particularly good quality, and mostly cured by curers from Scotland, whose brands are well known in the New York market. A great injury would be done to this new industry if roughly-cured and badly-packed herrings were sent from Ireland to America. For inferior herrings other markets than America ought to be selected.

I cannot speak too highly in acknowledgment of the valuable information and introductions that I received from the British Consuls in New York, Boston, Philadelphia, and Chicago, and I am much indebted to them for their personal courtesy and their readiness to give me every assistance. These gentlemen told me that it would give them pleasure to furnish Irish shippers with any information that would help to facilitate the trade in mackerel or herrings.

I also desire to acknowledge very gratefully the kind and hospitable reception that I received from all the American gentlemen whom I met during my visit. For their patience and courteous desire to assist me I cannot too warmly express my thanks.

ALEXANDER T. DUTHIE.

P.S.—A letter of August 2nd, 1901, from a trustworthy source in New York, gives more recent information on the subject of the above Report. The following is an extract:—

"The weather was more or less foggy again this week, but the fleet managed to land 3,400 barrels of salt mackerel, making total shore catch of 43,434 barrels. The quality is good, fish fat, and good colour Last sales of rimmed fish at 11 to 12 dollars, plain fish at 11 dollars. The size is mostly 200, some 230, and some 170 count. A few mackerel have arrived from Canada this week, and market is strong at 9 dollars to 9·50. Fish count 220/240, are well rimmed, and fair colour. No mackerel have arrived from Ireland. A sale of small 350/400 new Irish was made at 12 dollars, and as Irish are the only fish that will run small, buyers are taking more interest in them, and when a fat Irish mackerel is to be had they will find sale here, and everything promises that they will bring high enough price to permit curing, but you cannot expect extremely high prices. The demand for mackerel has been good—much better than last year. The total catch to this date last year was 32,000 barrels, only 10,000 barrels behind this year, and the fishing fleet is much larger this year. The first fat Irish arrived in this country last fall about middle of October, 320/350 count at 14 to 15 dollars, and 400/450 count at 12·50 dollars. This was in the face of a supply of small mackerel from Nova Scotia, and also a stock of early caught small mackerel from our shore. With no supply of medium or small fish promising from Canada or from our fishing, it would certainly (adds the writer) look as though there is good reason to cure Irish mackerel."

TRANSIT AND MARKETS.

CIRCULAR TO RAILWAY COMPANIES.

No. 5152/1901.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

25th April, 1901.

TRANSIT OF BUTTER AND EGGS.

SIR,

The Department for Agriculture and Technical Instruction for Ireland have had under consideration reports regarding the conditions under which certain Irish produce, such as butter and eggs, is conveyed by railways and otherwise to markets in Ireland and Great Britain.

It has been strongly represented that owing to the manner in which this produce is dealt with in course of transit it is very frequently not in good marketable condition when it arrives at the places of sale.

The Department are aware that regard must be had to other factors as well as to those dependent on railway arrangements in considering this important matter; but it is at the same time felt that much can be done by the Irish Railway Companies in improving the methods of dealing with the produce whilst in their care, and consequently it is deemed desirable to invite the attention of your Company to some of the principal causes which it is stated tend to bring about the depreciation complained of.

BUTTER.

In regard to the butter traffic, it is reported:—

1. That frequently the produce is not deposited in suitable places at railway stations before or during its transit, but is left in situations where it is exposed to the injurious influences of the weather which may at the time prevail, and is sometimes put in close proximity to objectionable and foul-smelling articles.

2. That packages containing the butter are often broken and soiled owing to rough and careless handling, or are damaged in the railway vehicles by being thrown against each other or against other articles carried in the same conveyance.

3. That the railway vehicles in which the butter is carried are often entirely unsuited and unprepared for conveying it, being sometimes devoid of proper ventilation, and frequently so arranged that in hot weather the butter is injuriously affected by the heat of the compartments, while on other occasions the packages are exposed to the rain.

4. That trucks uncleansed after having conveyed animals are frequently used for butter. Instances have also been brought under notice in which the vehicles conveying the butter contained coal dust.

5. That articles (such as boxes of fish) calculated to contaminate the butter have also not unfrequently been carried in the same vehicles.

6. That butter is often allowed to remain at railway termini or other stations in vehicles or in stores for appreciable periods before transference to steamships, &c., and is thus exposed to the danger of the prejudicial effects due to warm weather or to the proximity of injurious substances.

7. That while being conveyed from railway stations on carts or otherwise to the shipping or merchant's premises, the butter is frequently exposed to the weather, and is also placed close to other substances which may injure it.

The Department consider that at all stations where butter is received before, during, or after transit, and whilst awaiting entrainment or delivery, proper accommodation should be provided for it; and that, in order to assist in placing it in its best condition on the markets, butter should be conveyed, as far as possible in warm weather, at least, in properly equipped refrigerator vans, in which no other substance likely to taint or injure it should be carried; and further, whenever after the railway journey any appreciable delay occurs in transferring the butter to the steamships for exportation, or to merchants' premises locally, if not retained in refrigerator vans, it should be placed in convenient cold storage.

When butter is carried on road vehicles or on river barges from railway stations to shipping premises, &c., adequate means should be adopted to protect it from the influences of the weather, and from being placed in proximity to substances likely to damage the packages or their contents.

EGGS.

As regards the railway transit of eggs:—

1. Much damage is stated to be caused by the careless handling of egg-cases, especially when they are being placed into or removed from the railway vehicles, owing to the cases not being kept, as far as practicable, in a level position, to their being dragged along the ground with one end raised, or twisted on end from side to side, or let fall suddenly on the floors of the vehicles of platforms, or left standing on end at stations.

2. Instances have been reported of egg-cases having been placed in railway vehicles on their sides, and of having been carried on open trucks, when the packing materials became very wet with rain.

3. During the conveyance of cases of eggs from the railway premises to the steamers, adequate care does not appear to be taken in handling the produce, and protecting it from the weather and from proximity to foul-smelling substances.

Having regard to the fragile nature of the article concerned, too much attention cannot be given to the manner in which it should be dealt with, so as to allow it to reach the markets in saleable condition. The Department consider that cases of eggs should on all occasions be carried and moved, as far as practicable, in a level position, with their lids uppermost, and should not be dragged along the ground. They should not be exposed to the rain. They should be carefully placed in well-ventilated railway vehicles, and no foul-smelling or other objectionable substance should be conveyed in the same vehicle. When being placed on road vehicles, as well as while being carried thereon, similar precautions ought to be taken.

I am to request that you will be so good as to bring the above suggestions under the early notice of your Directors, on whose cordial concurrence therein the Department confidently rely.

I am, Sir,

Your obedient Servant,

T. P. GILL,

Secretary.

To the Secretary or Manager
of each Railway Company.

CIRCULAR TO SHIPPING COMPANIES.

No. 5152/1901. A.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

UPPER MERRION STREET, DUBLIN,
25*th April*, 1901.

TRANSIT OF BUTTER AND EGGS.

SIR,

The Department of Agriculture and Technical Instruction for Ireland have had under consideration reports submitted to them regarding the conditions under which certain Irish produce, such as butter and eggs, is conveyed by steamships to Great Britain.

It has been strongly represented that, owing to the manner in which the produce is frequently dealt with in the course of transit, it is not in good marketable condition when it arrives at the places of sale. The Department are aware that other factors as well as those dependent on shipping arrangements have led to these representations, and steps are being taken in respect thereof; but it is considered that much can be done by Steamship Companies in improving the methods of dealing with the produce; and it is therefore deemed desirable to apprise your Company of some of the principal causes which it is stated tend to bring about the depreciation complained of.

BUTTER.

In regard to butter it is reported:—

1. That on occasions when the butter is not moved at once from the road or railway vehicles on board the steamers, it is sometimes deposited in unsuitable places at or in the shipping sheds,

together with substances likely to injure it, and instances have been brought under notice where the butter was placed on the open quay without shelter from the weather.

2. Consignments of butter late for shipment by particular steamers are known to have been often left in the Shipping Companies' stores until the next steamer available, or have been kept in railway vehicles or stores. During this delay the butter is subjected in Summer to a much higher temperature than is desirable, and there is also liability to the risk of its becoming tainted, or of the packages being soiled by other articles kept in the same places or vehicles.

3. Instances have been reported in which packages of butter have been damaged by careless handling or hoisting on the steamer.

4. The practice frequently adopted of placing a number of these packages together in slings and hoisting them on board and into the ship's compartments is open to objection, owing to the liability of the boxes getting crushed by the slings, or falling from the slings, or suddenly coming in contact with parts of the ship.

5. It is stated that on some occasions the parts of the ship in which butter was stowed were left uncleansed after having been used for the carriage of coal, and many instances have been quoted in which boxes of fish, sacks of shell-fish, and other articles calculated to injure the butter were stowed in the same compartment with it.

Such conditions of transit must tend to depreciate seriously the market value of Irish butter (especially when foreign competition is so keen) either by directly injuring the butter or by soiling the packages in which it is contained.

It appears that very few of the cross-channel steamers which are engaged in the butter traffic yet possess proper cooling arrangements in the compartments in which the butter is stowed. The absence of such refrigerating apparatus in warm weather must greatly militate against the chances of getting Irish butter into the British markets in the good condition in which it should arrive.

The Department consider that at shipping stores, where butter is received and is not put on board the steamers at once, proper accommodation should be provided for it; that the butter should be hoisted on board and into the compartments of the vessel in properly constructed hampers or boxes, in which it should remain during the voyage, and in which it should be finally hoisted ashore; and that to assist in placing the butter in its best condition on the markets in Great Britain vessels engaged in this traffic should carry the butter in properly equipped and cooled compartments provided with suitable refrigerating apparatus. No substance likely to injure the butter should be stowed in same compartment, and the compartment should be kept free from noxious odours. Where butter remains unshipped for any appreciable period it is desirable that unless it is retained in refrigerator vans it should be placed in convenient cold storage by arrangement with the railway companies or otherwise.

EGGS.

As regards the egg traffic it is reported that:—

1. The cases containing eggs not unfrequently undergo improper handling at the shipping premises, and many instances have been brought under notice of want of care in moving the cases from road or railway vehicles and placing them in the stores. These cases are, it is stated, sometimes deposited on their ends in the shipping sheds instead of being laid flat, and are frequently dragged or propelled from side to side along the ground, and are sometimes left on the open quay unprotected from rain.

2. Very often the egg-cases are hoisted on board the ships by means of slings with cranes or steam winches. Several cases may be put in the slings together. There is reason to believe that much damage is done to the eggs during this operation owing to the pressure from the slings and to careless hoisting. One instance is recorded in which a case of eggs was knocked entirely out of the slings and fell into the ship's hold.

Similar instances of carelessness have been brought under notice when the eggs were being brought ashore at ports in Great Britain.

The Department consider that cases of eggs should be carried, or moved on all occasions with their lids uppermost, and should as far as practicable be kept level and not be placed on their sides or ends, or be dragged or propelled along the ground, or let fall or allowed to suddenly strike any object.

When put on the ground, on barrows, or on board ship, the cases should lie flat, with their lids uppermost, and be protected from rain and not be placed near any foul-smelling or otherwise objectionable substance.

The parts of the ships used for eggs should be properly ventilated, and the cases duly protected from the weather.

If slings are used in the process of hoisting cases of eggs, the cases should be secured, lids uppermost, in a flat position on wood or other substance, and otherwise so arranged as to avoid undue pressure of the slings. Hoisting should be carefully done, and the cases should not be allowed to strike any part of the ship or other object, or come violently in contact with the floor of the place where they are to be deposited.

I am to request that you will be so good as to bring the above suggestions under the early notice of your Directors, on whose cordial concurrence therein the Department confidently rely.

I am, Sir,

Your obedient Servant,

T. P. GILL,

Secretary.

To the Secretary or Manager
of each Shipping Company.

No. 7587/1901.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

UPPER MERRION STREET, DUBLIN,
June, 1901.

TRANSIT OF BUTTER.

SIR,

The Department of Agriculture and Technical Instruction for Ireland have had under consideration reports in regard to the manner in which Irish butter is prepared for transit to markets in Ireland and Great Britain.

These reports contain several useful recommendations, which, in view of the manifest importance of the matter, the Department deem it desirable to bring specially under the notice of consignors of Irish butter.

It has been strongly represented that—

1. A large number of the wooden boxes in which the butter is packed are unsuitable for the strain of ordinary transit, being constructed of very fragile material, and the different parts being insecurely fastened together.

2. The butter in many instances, is not packed sufficiently full up to the lids of the boxes, kiels, &c., to be capable of resisting external pressure, and the packages thus become broken.

3. The packages are frequently despatched without being covered with canvas, or some such other material, to preserve their cleanly appearance; and when being conveyed to railway or shipping premises from the premises of the consignors, sufficient care is not always observed to keep the boxes clean and to protect them from the weather.

Having regard to the nature of the article concerned, and to the great importance of the butter trade of the country, the Department consider that every practicable step should be taken by the Consignors to secure that, so far as lies in their power, the butter shall reach the markets in good saleable condition. The Department accordingly desire to invite attention to the following suggestions:—

All butter should be packed in a cool temperature, and when being put into boxes, kiels, &c., it should be packed full up to the lids.

The sides and bottom of the boxes should be constructed of wood not less than one-half inch thick, and the several parts should be securely fastened together by nails and sufficient tin clasps, or by some other proper method. The packages generally should be made of sufficient strength to bear the strain of ordinary transit. Wooden handles securely attached to the sides of the boxes are an advantage.

All packages should be neatly finished off, and be perfectly clean and fresh-looking. They should, during transit, be enclosed in clean covers of canvas or other suitable material.

Due care should be taken to guard against the packages being soiled by careless handling. They should not be put in any uncleanly place, or conveyed in an uncleanly vehicle, or allowed to come in contact with any material likely to injure them in any respect. When being conveyed to the railways or steamships, they should be protected from the weather.

The large boxes or chests in which lump butter from the country markets is conveyed to the stores and factories of Irish merchants should, in every instance, be thoroughly cleansed before being again returned for further use, and, to this end, it would be desirable that such boxes should be lined with some suitable impervious material which can be efficiently washed with water, and which will not admit of any fatty substance passing through to the outer covering.

The Department anticipate that these suggestions will have the cordial concurrence of consignors of Irish butter. The Department have addressed communications to the several railway and shipping companies on the subject of the transit of this class of produce, and they confidently hope that all concerned in the matter will co-operate to the fullest practicable extent in endeavouring to effect every possible improvement in the method of dealing with Irish butter intended for transit to the various markets in this country and in Great Britain.

I am, Sir,

Your obedient Servant,

T. P. GILL,

Secretary.

No. 3,376/1900.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

CIRCULAR TO LOCAL AUTHORITIES IN IRELAND UNDER THE SALE OF FOOD AND DRUGS ACTS, 1875 TO 1899.

UPPER MERRION-STREET,

DUBLIN, *October*, 1900.

SIR,

I am directed by the Vice-President to draw the special attention of your Council, as the Local Authority, to the following provisions of the Sale of Food and Drugs Act, 1899 (62 & 63 Vict., ch. 51) which came into operation on the 1st January, 1900.

This Act should be read in connexion with the existing Statutes which it amends and supplements, viz., the Sale of Food and Drugs Act, 1875 (38 & 39 Vict., ch. 63); the Sale of Food and Drugs Act Amendment Act, 1879 (42 & 43 Vict., ch. 30); and the Margarine Act, 1887 (50 & 51 Vict., ch. 29). These three statutes, together with the Act of 1899, are to be cited as the Sale of Food and Drugs Act, 1875 to 1899.

Margarine.

By section 5 of the Act of 1899, the provisions of the Margarine Act, 1887, are extended to "margarine-cheese," which expression is defined (by section 25 of the Act) as meaning "any substance, whether compound or otherwise, which is prepared in imitation of cheese, and which contains fat not derived from milk."

The effect of section 5 is that no such substance can be lawfully dealt in, exposed for sale, or sold except under the name of "margarine-cheese," and under the conditions set forth in section 6 of the Margarine Act, 1887, with respect to margarine, *mutatis mutandis*; and the section further requires that all margarine-cheese sold or dealt in otherwise than by retail, shall either be inclosed in packages marked in accordance with the Margarine Act, 1887 (as amended by section 6 of the new Act), or shall be itself conspicuously branded with the words "margarine-cheese."

Section 6 of the Act of 1899 provides that the brand or mark, required under the said Act or the Margarine Act, 1887, to be placed on any package containing margarine or margarine-cheese, shall be on the package itself and not solely on a label, ticket, or other thing attached thereto.

By section 7 (1) of the Act of 1899, every occupier of a manufactory of margarine or margarine-cheese, and every wholesale dealer in such substances, is required to keep a register showing the quantity and destination of each consignment of such substances sent out from his manufactory or place of business, and this register is to be open to the inspection of any officer of the Department (sections 7 and 24).

By section 7 (2) of the same Act any officer of the Department is empowered to enter at all reasonable hours any manufactory of margarine or margarine-cheese, and to inspect any process of manufacture therein, and to take samples for analysis.

The provisions of section 9 of the Margarine Act, 1887, relating to the registration of manufactories, are extended to any premises wherein the business of a wholesale dealer in margarine or margarine-cheese is carried on, and the registration thereof must be forthwith notified by the Local Authority to the Department [section 7 (4) and (5)].

It is important to note that section 8 of the Act of 1899 makes it an offence under the Margarine Act, 1887, to manufacture, sell, expose for sale, or import any margarine, *the fat of which* contains more than ten per cent. of butter-fat. But this section does not apply to any margarine manufactured or imported in fulfilment of any contract made before the 20th July, 1899.

In this connexion it may be pointed out that the effect of section 17 (2) of the Act of 1899 is that in respect of third or subsequent offences under the said Act or under the Margarine Act, 1887 (both Acts being by section 28 included under the expression "the Sale of Food and Drugs Acts") the offender will, if the offence in the opinion of the Court was committed by his personal act, default, or culpable negligence, be liable (if the Court is of opinion that a fine will not meet the circumstances of the case) to imprisonment, with or without hard labour, for a period not exceeding three months.

Sale of Milk in a Public Place.

Section 9 of the Act of 1899 requires every person who, himself or by his servant, in any highway or place of public resort sells milk or cream from a vehicle or from a can or other receptacle, to have his name and address conspicuously inscribed on the vehicle or receptacle, under a penalty not exceeding two pounds.

Labelling of Condensed, Separated, or Skimmed Milk.

Section 11 of the same Act provides that every tin or other receptacle containing condensed, separated, or skimmed milk shall bear a label clearly visible to the purchaser on which the words "Machine-skimmed milk," or "Skimmed Milk," as the case may require, are printed in large and legible type, and that if any person sells or exposes or offers for sale condensed, separated, or skimmed milk in contravention of the section, be shall be liable on summary conviction to a fine not exceeding ten pounds.

Definition of Food.

Section 26 of the Act provides that for the purposes of the Sale of Food and Drugs Acts, the expression "Food" shall include every article used for food or drink by man, other than drugs or water, and any article which ordinarily enters into or is used in the composition or preparation of human food; and shall also include flavouring matters and condiments.

Duties of Local Authorities.

Section 3 (1) of the Act specifically imposes upon the Local Authority (*i.e.*, each County and Borough Council in Ireland), the duty of appointing a public analyst and of putting in force from time to time, as occasion may arise, the powers with which they are invested, so as to provide proper securities for the sale of food and drugs in a pure and genuine condition, and in particular the duty of directing their officers to take samples for analysis; and the Department trust that the regular and efficient discharge of their statutory obligations by the Local Authorities will obviate any necessity for the exercise by the Department of the powers conferred upon them by section 3, sub-sections 2 and 3 of the same Act.

In this connection the Department would particularly urge upon Local Authorities the importance of making effective arrangements for the systematic sampling of articles of food; and the officers entrusted with this duty should be very careful to strictly observe the various requirements in the Acts as to the mode of taking such samples.

Powers to take Samples.

Section 13 of the Act of 1875 empowers any Medical Officer of Health, Inspector of Nuisances, or Inspector of Weights and Measures, or any Inspector of a Market, or any police constable under the direction and at the cost of the Local Authority appointing such officer, inspector, or constable, or charged with the execution of the Act, to procure any sample of food or drugs; and, if he suspect the same to have been sold contrary to any of the provisions of the Act, he is required to submit the same to be analysed by the District Analyst.

Section 3 of the Amendment Act of 1879 extends this power to procuring at the place of delivery any sample of milk in course of delivery to the purchaser or consignee in pursuance of any contract for the sale to such purchaser or consignee of such milk; and this latter provision is further extended by section 14 of the Act of 1899 so as to apply to every other article of food as well as milk, and it is provided that no samples are taken under the last-cited section, except upon the request or with the consent of the purchaser or consignee.

Power is also conferred by section 8 of the Margarine Act of 1887, and section 5 of the Sale of Food and Drugs Act, 1899, to procure samples of margarine or margarine-cheese for analysis.

Mode of Taking Samples.

Section 14 of the Act of 1875, as amended by section 13 of the Act of 1899, provides that the person purchasing any article with the intention of submitting the same to analysis shall, after the purchase shall have been completed, forthwith notify to the seller or his agent selling the article, his intention to have the same analysed by the public analyst, and shall divide the article into three parts to be then and there separated, and each part to be marked and sealed, or fastened up in such manner as its nature will permit, and shall, if required to do so, deliver one of the parts to the seller or his agent. He shall afterwards retain one part for future comparison, and submit the third part, if he deems it right to have the article analysed, to the analyst.

By section 10 of the Margarine Act, 1887, any officer authorized to take samples under the Sale of Food and Drugs Act, 1875, is enabled, without going through the form of purchase provided by that Act, but otherwise acting in all respects in accordance with the provisions of that Act as to dealing with samples, to take for the purposes of analysis samples of any butter, or substances purporting to be butter, which are exposed for sale and are not marked "Margarine," as provided by that Act; and any such substance not being so marked shall be presumed to be exposed for sale as butter.

Section 10 of the Sale of Food and Drugs Act, 1899, provides that in the case of a sample of milk taken in the course of delivery, or of margarine or margarine-cheese forwarded by a public conveyance, the person taking the sample shall forward, by registered parcel or otherwise, a portion of the sample marked, and sealed, or fastened up, to the consignor, if his name and address appear on the can or package containing the article sampled.

Penalty for Obstruction.

Section 16 of the Act of 1899 declares that any person who wilfully obstructs or impedes any inspector or other officer in the course of his duties under the Sale of Food and Drugs Acts, or by any gratuity, bribe, promise, or other inducement prevents or attempts to prevent the due execution by such inspector or officer of his duty under those Acts, shall be liable on summary convictions, for the first offences to a fine not exceeding twenty pounds, for the second offence to a fine not exceeding fifty pounds, and for any subsequent offence to a fine not exceeding one hundred pounds.

Prosecutions.

Section 19 of the Act of 1899 provides that when any article of food or drug has been purchased from any person for test purposes, a prosecution under the Sale of Food and Drugs Acts in respect of the sale thereof shall not be instituted after the expiration of twenty-eight days from the time of purchase.

In every prosecution under the Act the summons must state the particulars of the offence or offences alleged, and also the name of the prosecutor, and shall not be made returnablo in less time than fourteen days from the day on which it is served, and there must be served therewith a copy of any analyst's certificate obtained on behalf of the prosecutor.

General.

In view of the position in which the administration of the laws in regard to adulteration has been placed in consequence of the passing of the Act of 1899, the Department would be glad if your Local Authority would consider whether the number and class of the inspectors appointed by them is such as to be fully adequate to meet the requirements of their district. Due care and discrimination should be exercised in the selection of person for employment as sampling officers.

Every Inspector and other officer employed by your Local Authority in connection with the administration of these Acts should be supplied with copies of the several Acts, and should be required to make themselves fully acquainted with the provisions contained therein.

The Department will be glad to learn, at as early a date as possible, the steps which your Local Authority are taking to give effect to the extended vigilance in the detection of fraudulent practices required by the Act of 1899.

Additional copies of this circular will be forwarded to you for distribution among members of your Local Authority, and the officers concerned, on being informed of the number you require.

I am, Sir,

Your obedient Servant,

T. P. Gill,

Secretary.

To

The Secretary of each County Council,
and the Town Clerk of each Borough.

LIST of ANALYSTS acting under the Sale of Food and Drugs Acts, 1875 to 1899, and under the Fertilisers and Feeding Stuffs Act, 1893, for the Boroughs and Counties in Ireland.

LOCAL AUTHORITIES.	Name of Analyst.
COUNCILS OF BOROUGHS:	
Belfast,	Robert Barklie, F.C.S.
Clonmel,	Sir C. A. Cameron, C.B., M.D.
Cork,	D. J. O'Mahony, F.C.S.
Drogheda,	Sir Charles A. Cameron, C.B., M.D.
Dublin,	Do.
Kilkenny,	Do.
Limerick,	Do.
Londonderry,	Professor John Robinson Leebody, M.A., D.Sc., F.I.C.
Sligo,	Sir Charles A. Cameron, C.B., M.D.
Waterford,	Do.
Wexford,	Do.
COUNTY COUNCILS:	
Antrim,	Robert Barklie. F.C.S. and J. F. W. Hodges, F.I.C.
Armagh,	J. F. W. Hodges, F.I.C.
Carlow,	Sir Charles A. Cameron, C.B., M.D.
Cavan,	Sir Charles A. Cameron and E. Douglas Cameron.
Clare,	Sir Charles A. Cameron, C.B., M.D.
Cork,	D. J. O'Mahony, F.C.S.
Donegal,	Robert Barklie, F.C.S.
Down,	Sir Charles A. Cameron, C.B., M.D.
Dublin,	Sir C. A. Cameron and E. Douglas Cameron,
Fermanagh,	Do. do.
Galway,	Sir Charles A. Cameron, C.B., M.D.
Kerry,	Do.
Kildare,	Do.
Kilkenny,	Do.
King's,	Thomas Woods, M.D.
Leitrim,	Sir Charles A. Cameron, C.B., M.D.
Limerick,	Do.
Londonderry,	Professor John R. Leebody, M.A., D.Sc., F.I.C.
Longford,	C. R. Tichborne, LL.D., Ph.D.
Louth,	Sir Charles A. Cameron, C.B., M.D.
Mayo,	Sir Charles A. Cameron and E. Douglas Cameron.
Meath,	Sir Charles A. Cameron, C.B., M.D.
Monaghan,	Do.
Queen's,	Do.
Roscommon,	Sir Charles A. Cameron and E. Douglas Cameron.
Sligo,	Sir Charles A. Cameron, C.B., M.D.
Tipperary, North Riding,	Do.
Do., South do.,	Do.
Tyrone,	Robert Barklie, F.C.S.
Waterford,	Sir Charles A. Cameron and E. Douglas Cameron.
Westmeath,	Sir Charles A. Cameron, C.B., M.D.
Wexford,	Do.
Wicklow,	Do.

BY THE DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

SALE OF MILK (IRELAND) REGULATIONS, 1901.

The Department of Agriculture and Technical Instruction for Ireland, in exercise of the powers conferred on them by Sections 4 and 24 of the Sale of Food and Drugs Act, 1899, do hereby make the following Regulations :—

MILK.

1. Where a sample of milk (not being milk sold as skimmed, or separated, or condensed milk) contains less than 3 per cent. of milk-fat, it shall be presumed for the purposes of the Sale of Food and Drugs Acts, 1875 to 1899, until the contrary is proved, that the milk is not genuine, by reason of the abstraction therefrom of milk-fat, or the addition thereto of water.
2. Where a sample of milk (not being milk sold as skimmed, or separated, or condensed, milk) contains less than 8·5 per cent. of milk-solids other than milk-fat, it shall be presumed for the purposes of the Sale of Food and Drugs Acts, 1875 to 1899, until the contrary is proved, that the milk is not genuine by reason of the abstraction therefrom of milk-solids other than milk-fat, or the addition thereto of water.

SKIMMED OR SEPARATED MILK:

3. Where a sample of skimmed or separated milk (not being condensed milk) contains less than 9 per cent. of milk-solids, it shall be presumed for the purposes of the Sale of Food and Drugs Acts, 1875 to 1899, until the contrary is proved, that the milk is not genuine, by reason of the abstraction therefrom of milk-solids other than milk-fat, or the addition thereto of water.

EXTENT.

4. These Regulations shall extend to Ireland.

COMMENCEMENT.

5. These Regulations shall come into operation on the First day of September One Thousand Nine Hundred and One.

SHORT TITLE.

6. These Regulations may be cited as the Sale of Milk (Ireland) Regulations, 1901.

[L.S.]

In witness whereof the Department of Agriculture and Technical Instruction for Ireland have hereunto set their Official Seal this 2nd day of August, One Thousand Nine Hundred and One.

T. P. GILL,
Secretary

No. 3133/1900.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

Circular to Local Authorities in Ireland for the purposes of the Fertilisers and Feeding Stuffs Act, 1893.

FERTILISERS AND FEEDING STUFFS ACT, 1893.

ISTRICT AGRICULTURAL ANALYSTS' QUARTERLY REPORTS.

UPPER MERRION-STREET, DUBLIN,
October, 1900.

SIR,—In connection with the transfer to this Department, pursuant to Section 2 (*b.*) of the Agriculture and Technical Instruction (Ireland) Act, 1899, of the powers and duties of the Lord Lieutenant and Privy Council in Ireland under the Fertilisers and Feeding Stuffs Act, 1893, I desire to draw attention to Section 5, sub-section (3) of the latter Act, which as now applied, provides that every District Analyst shall report to this Department as they direct the result of any analysis made by him under that Act.

The District Analysts in Ireland for the purposes of the Fertilisers and Feeding Stuffs Act are, as your Council are no doubt aware, the Analysts appointed under the Sale of Food and Drugs Acts; and I am to request that your Council will be good enough to instruct their District Analyst to furnish to this Department in the forms, of which supplies are enclosed herewith, Quarterly Reports made up to the last day of March, June, September, and December, respectively, in the current and each subsequent year upon the analyses of

(1) Fertilisers,
(2) Feeding Stuffs,

made by him under the Act. The Form printed on white paper should be used for reports as to Fertilisers, and that on blue paper for reports as to Feeding Stuffs. If no analyses have been made in any particular quarter the return should be furnished marked "Nil."

I have also to request that your Council will kindly furnish the Department with Quarterly Statements of any prosecutions instituted by them under the powers conferred by Section 7 of the Act of 1893, with the results thereof.

I am,
Sir,
Your obedient Servant,

T. P. GILL,
Secretary.

To the Secretary or Clerk
of each County or Borough Council.

REPORTS

ON

THE DUBLIN INSTITUTIONS OF SCIENCE AND ART.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

REPORT OF THE DIRECTOR

OF THE

DUBLIN INSTITUTIONS OF SCIENCE AND ART.

TO THE SECRETARY OF THE DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

DUBLIN, *April* 1, 1901.

SIR,—I have the honour to submit the following report for the fifteen months from January 1st, 1900, to March 31st, 1901 :—

GENERAL ADMINISTRATION.

Staff.—There has been no change during the period in the permanent staff, but as already reported the want of more assistance in some departments of the Museum, and of technical assistants and skilled attendants, is a great hindrance to progress. The addition to the School of Art of two pupil teachers has worked very satisfactorily.

Office Work.—The usual official work and correspondence has very largely increased during the year. This will be understood from the fact that there were 960 files of registered correspondence, containing about eight letters or papers each, and 382 indexed miscellaneous papers, passed through the office in 1900 as against 840 registered files of about five each, and 256 miscellaneous papers in the previous year, the number of indexed papers dealt with having increased from about 4,400 to about 8,000. The number of outgoing letters has also largely increased, and it will show the variety of work when I mention that about ninety of the papers written, besides a considerable number of notes and telegrams, were in French, Italian, or German.

The work connected with the College of Science in the office has considerably increased owing to the institution of summer courses for teachers, and of courses for teachers in training, and the admission of the veterinary students. The Council of the College held sixteen meetings during the year 1900, the Board of Visitors of the Museum and of the Botanic Gardens met on seven occasions, and the Council of Trustees of the National Library on seventeen. The accounts work has also increased during the year.

Travelling.—I went to London in May and again in July to attend some important sales at Christie's, and also to visit several dealers, and was successful in obtaining a great many very valuable additions to the furniture collection, some of them at exceedingly low prices, and also obtained a very satisfactory share of the Myers Collection, which was divided at South Kensington. In August I visited the Paris Exhibition, and also several Technical Schools in Paris and Rouen. As I have submitted a special report of these visits, I need not further allude to them here.

In February, 1901, I spent six days in London, where I made some inquiries at the British Museum relative to classification of Greek pottery; visited Christie's salerooms and some dealers, and arranged with the Director of the Victoria and Albert Museum for a loan to this Museum next winter of the furniture bought at the Paris Exhibition.

Dr. Scharff, in February and March, 1901, visited the Museums of Brunswick, Magdeburg, and Hildesheim, and inspected dealers' stocks at Cambridge and Bonn.

Mr. Coffey visited Belfast in May to see a find of prehistoric urns and Sir John Leslie's and other collections of Irish antiquities, and in June he went to Kilkenny to see what part of the antiquities in the local museum might be procurable for these collections. In July he went to Monasterboice to see the lower panels of the High Cross which had been uncovered by the Board of Works. In September he went to Enniskillen to see the excavation of a lake-dwelling in the neighbourhood, and in October he visited Cork to see Mr. Day's collection; and he also went to Paris to attend the International Congress of Anthropology and Prehistoric Archæology. Mr. Buckley went to Coleraine in May to inspect old oak furniture from Normandy, which was afterwards acquired for the Museum. Professor Cole went to London in June to obtain specimens for the mineral collection, and Professor Barrett went in July to see new electrical apparatus. Professor Lyon was sent to Cambridge to see such improvements as have been introduced in recent years in the engineering schools.

Mr. Brenan went to London in August to see the students' works at the annual exhibition, as also did Mr. Luke; and in February, 1901, Mr. Brenan visited Birmingham, Manchester, and Glasgow specially to note the work carried on in technical classes at the schools of art.

As remarked in my report of last year, an extension of the practice of visiting foreign museums and institutions is absolutely necessary if the museum collections and other institutions are not to fall behind those in other countries. I much regret that more of the Museum staff could not be sent to the Paris Exhibition. It would be difficult to overestimate the importance of keeping up the connection with the several collectors and reproducers of the works of art established by the late Director for Art and of the Science and Art Department; and as regards scientific collections, it is absolutely necessary that the officials in charge should frequently travel to see what specimens are being obtained for other museums, to find out by what channels they obtain them, and to see how they are distributed and arranged. As I reported last year, it is becoming every year more necessary to make and to keep up acquaintance with private collectors in various branches of Zoology in all civilised countries. As Dr. Scharff has pointed out, museum keepers now can only rely upon specialists, who are generally private collectors, to obtain accurately named specimens.

SCIENCE AND ART MUSEUM.

Visitors and Hours of Opening.—The number of visitors during the year 1900, was 425,884, of whom 64,165 came on Sunday afternoons, and the number for the three months January, February and March, 1901, was 93,364, of whom 15,955 came on Sunday afternoons. In the twelve months from April 1st, 1900, to March 31st, 1901, the number of visitors was 425,661, of whom 63,894 were Sunday visitors.

The alteration of the hour of closing on two evenings in the week from 9 o'clock to 10, seems to be appreciated by the public, there being always during the latter part of these evenings a sufficient number of persons in the Museum who have evidently come with the proper object of examining some portion of the collections. On an average, there have been sixty-nine persons in the Museum after 9 o'clock every evening who would have had to leave if the Museum had closed at that hour.

Technical Assistance in the Museum.—During the year temporary expert assistants have been employed in the Zoological section, where Mr. G. P. Farran has worked at the arrangement of the collections of amphibians and fishes, and Miss Pike has worked for some time arranging specimens. In the Botanical section Miss Laird has been employed a great part of the year at the economic collections—arranging and labelling. Miss Hughes has been employed chiefly at the Index collection, and also in the economic, and both these ladies have done much work in the Herbarium during the year. Miss M. A. Murray (who has worked under Professor Flinders Petrie, and who arranged the Egyptian collections in the Museum of the National Society of Antiquaries at Edinburgh), commenced in February, 1901, the arrangement of the corresponding department in this Museum.

Publications.—The sale of the short ½*d*. Guide during the year continues to fully justify the plan on which it was drawn up; thirteen editions and part of the fourteenth have been sold in three years, comprising 36,244 copies. In preparing the fifteenth edition, I have introduced some improvements, to give rather more general information, and I have prefixed to it an Index by which a visitor may see at once in what part of the Museum any class of objects is to be found; this will, I hope, considerably increase its usefulness. I regret that during the year very little has been done to advance the General Guide which is being published in penny parts. The general work in the office and correspondence, both in connection with the Museum and also with the College of Science, and the many questions which are involved in the proposed new organization and reconstruction, have made it impossible for me to do more than a very little towards this most important work.

Mr. Coffey has been collecting materials for the Guide to the collections under his charge, and Mr. Alabaster has made some progress with the first part of the Guide to the collections of pottery and porcelain. Miss M. A. Murray, whilst arranging the Egyptian collections, is preparing the Guide to them. The care of the Zoological, Botanical, and Geological collections has so fully occupied the time of the proportionately small staff allotted to them, that nothing has been done to provide the public with the Guides so badly needed.

Museum Lectures.—The fourth series of demonstrations or informal lectures was carried out in the winter of 1899–1900, and the list of them, as given in my report for the year 1899, was included in the last report of the Board of Education. The desire to obtain tickets for these lectures is much greater for some subjects than for others, and, of course, in winter very bad weather sometimes interferes with the attendance at them, but on the whole it is very satisfactory, and it is certain that all who take the trouble to apply for tickets and to come, are really interested in the lectures, and do not come merely out of idle curiosity. It may be mentioned that 755 persons attended them during the winter.

The Lectures given in the past winter, 1900-1, were as follows:—

Date.	Name.	Subject.
Nov. 29,	Col. Plunkett,	How to visit a Museum.
Dec. 4,	Dr. Scharff,	Crocodiles, Snakes, and Lizards.
Dec. 6,	Mr. Strickland,	Engraving and Engravers.
Dec. 11,	Mr. Carpenter,	Lemurs and Monkeys.
Dec. 13,	Mr. Strickland,	Engraving and Engravers.
Dec. 18,	Mr. Carpenter,	Apes and Men.
Dec. 20,	Mr. Alabaster,	Dutch XVIIIth century Faience.
Jan. 8,	Prof. Johnson,	The Flax-dodder and other Parasite Plants.
Jan. 10,	Col. Plunkett,	Some objects from the Paris Exhibition.
Jan. 15,	Mr. Cunnington,	Crabs and Lobsters.
Jan. 17,	Mr. Coffey,	The first use of Metal in Europe.
Jan. 22,	Dr. Scharff,	Turtles and Tortoises.
Feb. 5,	Dr. Patten,	The Shore and Sea Birds of the Irish Coast.
Feb. 7,	Count Plunkett,	Chapel of Sta. Caterina, Church of San Maurizio Milan.
Feb. 12,	Prof. Johnson,	Botanical Specimens for School Teaching.
Feb. 14,	Mr. Lyster,	Writing Materials in olden times.
Feb. 19,	Mr. Nichols,	Irish Sea Fishes.
Feb. 21,	Mr. Pollok,	Representations of Buddha.
Feb. 28,	Mr. Johnston,	Clocks and Watches.
March 5,	Mr. Nichols,	Economic Products of the Sea.
March 7,	Mr. Brenan,	Antique Lace.
March 14,	Mr. Brenan,	Modern Lace.

As it has been said that students and others, who would like to attend, cannot easily do so in the evening, the experiment has been tried this winter of giving some of the Demonstrations at 4.30 in the afternoon, the result is that the average attendance at each lecture in the afternoon has been thirty-five, and in the evening twenty-five. Mr. Lane Joynt gave a lecture on the Leinster Collection of Postage Stamps, and the attendance was so large that he repeated it; 110 persons attended the two.

Building Works.—No works of great importance have been carried out during the past year, though many items of maintenance and repairs have been executed. I have frequently pointed out in previous reports the very unsatisfactory state of the temporary annexe buildings, the roofs leak very much during heavy rains, and the buildings within a few years will be very dilapidated; when the plan of the new buildings for the College of Science is decided upon, it will be necessary to consider how this annexe is to be reconstructed to accommodate properly the collections now in it, that is to say the fossils, which form one of the most valuable of our collections, the geological and mineralogical sections which are of great and increasing importance, the Natural History stores, which are needed not only for storage, but also for the examination of specimens by experts and students, and the Industrial collection, which, though far from what they ought to be, are of considerable value. I pointed out last year the desirability of this, and also of adding a gallery for models of machinery and other engineering exhibits, and I think, as I then wrote, that it is very desirable that this gallery should be so arranged as to be equally easy of access for students of the College of Science and for the general public.

If the Department contemplates in the future the addition of collections specially arranged for the encouragement of commerce, it is important to reserve sufficient space for this when planning alterations and reconstructions.

Workshops.—In the workshops there has been a great deal of work accomplished. The alteration of the cases for Birds in the Natural History Division was prosecuted steadily, and the Top Gallery has been cased all round between the pillars with the old table-case tops, supported on light iron girders, and altered so as to render them suitable. A case was also built for the Egyptian Loom. Several of the old table-cases in the Botanical Department have been re-made so as to take up less floor space. Three new cases have been made for the Egyptian collections; the wall cases in the Antiquities Room III., and the Ceramic Room VIII., have been lowered so as to bring the objects exhibited more within the line of sight. Stands have been made for Steel Safe cases, and there has been much work done in fitting up of objects, providing and glazing frames and internal fittings for show cases, mounting of drawings and photographs, etc. The following cases were obtained from outside contractors, viz.:—

2	Draw out cabinets	for	architectural photographs.
2	do.	do.	for stamp collection.
1	do.	do.	for photos of antiquities.
2	Steel safe cases for antiquities collection.		
2	Upright floor cases for		do.
2	Wall cases for mineralogical collection.		

The plans and specifications for all of the above were drawn up in the office and they have all proved satisfactory.

Instead of the locks formerly on the Museum cases, padlocks of a special pattern, with plates attached, both to the locks and cases, are being introduced as opportunity occurs. The advantage of this change is that the lock can be fixed to the case without having to use the key, and should the lock get out of order, it is not necessary to employ a locksmith to open it, for the padlock is wrenched open and returned to the maker or destroyed, and, by this procedure, the key is never given into the hands of a workman. This pattern was invented by Mr. White; it is self-locking, the key being required only for opening it, and there is a stud on the plate fixed to the case which goes into the lock, and is held firmly when the lock is closed, so that this cannot swing about.

These padlocks have now been in use about three years and prove, in every respect, satisfactory.

ART AND INDUSTRIAL COLLECTIONS.

It will be convenient to take the several branches of this department in succession, pointing out the work that has been done and the developments which are proposed in each.

Irish Architecture.—When the cast of the Monasterboice Cross was taken it was impossible to mould the four lower panels of the base, as they were buried in the soil. When they were uncovered, last summer, casts were taken so that the whole cross is now complete. As I pointed out, on April 3rd, 1900, it is very important to secure for the Museum casts of all the important crosses and architectural ornaments which are to be found in many places in Ireland, and I hope that some day we shall see a court devoted to a collection of these relics of a very interesting sub-style of architecture. The numerous pre-historic inscribed stones should also be moulded.

Gothic Architecture.—More examples of Gothic ornamental stone work would be very useful if there were space to show them.

Egyptian Antiquities.—Miss M. A. Murray is classifying and arranging this collection, and it is now divided into (*a*) casts of sculpture, (*b*) mummies and their accompaniments, to illustrate mode of burial and Egyptian belief in a future life, (*c*) amulets, scarabs, and other small ornaments, (*d*) pottery, chiefly pre-historic, (*e*) casts of bilingual and trilingual stones.

When the arrangement of this collection and the part of the Guide which Miss Murray is writing to illustrate it are completed students and the many persons who take an intelligent interest in Egyptology, but have not the opportunity of working at the British Museum, will find here a series of objects which will be of real use to them and add greatly to their interest in the literature of the subject. It is not a branch of the collections which it would be advisable to spend any considerable portion of the funds allotted for purchases, but it may be expedient to buy occasionally some object which does not cost much, but is valuable to fill some gap in a series.

Greek and Roman Antiquities.—These not only, like the Egyptian Collection, illustrate Ancient History, but have generally a high artistic value to students of Art. Most of the objects acquired during the year are valuable as regards both these aims; for instance, Greek Vases, helping towards the completion of a series which should in time be made to comprise all periods of this art; two Terra-cotta Statuettes, better than any of those hitherto in the Museum, and of very graceful design; the copy of a very beautiful Greek Monile or necklet in the British Museum; five specimens of the very fine reproductions of Etruscan jewellery by the late Carlo Giuliano, which it is more convenient to keep with the other jewellery, and a few Roman Coins. More good bronzes, busts, and other specimens are desirable to illustrate Greek art and the classical styles revived in the Renaissance and later periods. The interest of the Cypriote Pottery, of which we now have many examples, is chiefly in tracing the history and development of the arts in the Greek islands.

Indian and other Oriental Art.—A very valuable collection of Brass and Copper work from Llassa, showing the striking characteristics of Thibetan art, has been lent by Major Chenevix Trench. Other additions are chiefly in the Ceramic Collection, and probably in future most additions to the Oriental collections will be in this branch, in which Oriental taste in design and colouring is so remarkable.

In No. X. Room, on the ground floor, are now hung on screens the casts of the stone ornament, in relief, in the palace of Fatahpur Sikri at Agra, which have been in the Museum for some years without being exhibited to the public. The casts of Assyrian Sculptures and of Cuneiform Inscriptions have also been transferred from the Egyptian collections to this room.

Renaissance and subsequent work.—The copy of Donatello's Cantoria now in the Museum of Florence Cathedral, which was shown in the Italian Pavilion at the Paris Exhibition by the Signa Terra-cotta Factory, is an acquisition of great value to architects and students, and in this copy the mosaics and the colouring of the original are reproduced; unfortunately, several pieces have been broken in transit, so it will not be possible to erect it for some weeks at least.

Some more casts of Italian Sculpture of the best period are much wanted.

Gems and Cameos.—No addition has been made to this interesting collection.

Coins and Medals.—Some fine gold Roman Coins have been obtained.

Jewellery.—The copy of the Greek Monile in the Louvre and good specimens of the work of the late Carlo Giuliano in Etruscan and Classical styles have greatly increased the interest and value of this collection, which should be further added to, in order that modern jewellers and designers, as well as the public generally, may see as many fine examples as possible.

No additions of importance have been made to the collections of Ecclesiastical Vestments, Fans, and Costumes, and other small objects.

Musical Instruments.—The collection represents well both primitive instruments used in various parts of the world and those of civilised nations, especially of this country, so it is well to make them more completely representative when opportunities occur for doing so without much expense. Three instruments of Irish manufacture have been added.

Furniture.—The collection of Furniture has been considerably extended, and now forms a fairly representative series of the Italian, French, and English Schools, the principal additions being, in the Italian division, a remarkably fine table inlaid with brass, ivory, and mother-of-pearl; and in the French several fine specimens of carved oak furniture from Normandy, a 16th century carved table, some 18th century fine panelling, a cabinet and a commode of black Boule, a Louis XV. Marquetry commode, a Marquetry cabinet, and a "Bonheur du Jour" of Louis XVI. period, and a copy of a chair from the Trianon. To the English furniture have been added two excellent copies of chairs of 14th and 17th centuries, a Chippendale supper or loo table, and a mirror. A chair and cabinet were purchased from the Paris Exhibition as examples of the modern Continental style.

It would be advisable to increase considerably this collection, which is so directly useful to all engaged in the manufacture of furniture in Dublin, and to students, but it is difficult to find space for any additions.

Arms and Armour.—A very interesting *facsimile* of a tilting helm, of about the year 1400, has been acquired.

Pottery, Porcelain, and Glass.—Very valuable additions have been made to this room. The seventy-nine Persian tiles, obtained as a share of the Myers Collection, purchased at South Kensington, are of the very highest class, and we also obtained in a similar way some fine tiles for architectural decoration from Central Asia.

Interesting specimens of Romano-British pottery, and several examples of Italian Majolica, of makes not previously represented here, have been obtained to make more complete our fine show of ceramics. Specimens by Castellani, who has revived the old Majolica manufacture, were obtained from the Paris Exhibition. To our collection of Wedgwood has been added a bowl in celadon green, of which we had no example, and a few other pieces and additions have also been made to the Chinese, Japanese, and other branches. This collection is now fairly representative; but gaps in it should be filled up as opportunities occur.

A very beautiful example of the glass lamps, which formerly hung in some of the Cairo Mosques, was obtained from the Myers Collection; some specimens of ancient Syrian glass have been procured, and some additional pieces of Waterford glass. Increased space is greatly needed to display this collection, and I think this might be provided by putting a gallery along the inner wall of the room.

Enamels.—Small pieces of Champlevé, Limoges, and Battersea have been acquired during the year, but the very high prices that good examples command make it difficult to add to our small exhibit of this beautiful art; though, if it is to be revived in Ireland, it is very important that there should be in this Museum a good series of typical examples.

Bronze and Ironwork.—A nice copper Italian Navette, of 15th century, is the only addition, but it is desirable that more good examples should be obtained when favourable opportunities occur.

Pewter.—The objects obtained from the Paris Exhibition will increase the interest of this part of the collection, which should be still further increased, as most of the objects are especially useful for Art Students.

Silver and Plated Ware.—A watch recently acquired is a good specimen of English 18th century work; though placed in the case of "watches," the chief value lies in the finely-worked case, which is a very good piece of goldsmith's work. A few pieces of Irish and other silver have been obtained during the past year, but the prices now obtained make it almost impossible for any one to purchase, except private collectors of great wealth, though it is highly desirable to extend considerably our small collection of silver.

Bookbindings.—More German, French, and other specimens have been recently obtained, and the collection has been greatly improved of late years, so that bookbinders may now find in it many examples of very good work in several styles.

Ivories.—It is desirable that all the ivories and reproductions should be arranged in one room in a regular series, but it has not been possible to do this yet.

Miniatures.—These are now more appropriately placed than formerly in No. II. Passage Room on the First Floor with the Water Colours; it is not likely that this collection would be increased unless under some exceptional circumstances.

Architectural Photographs.—The selection of Professor Goodyear's Photographs to show the asymmetry and constructions giving exaggerated perspective in Italian Renaissance Buildings, are hung on screens in Passage Room No. I., and a beginning has been made with the series of architectural photographs to illustrate all the recognised styles, arranged in cabinets.

Japanese Art.—The very good examples of this art of the best periods are exceedingly useful and suggestive for art students; but it would be useless to get more specimens until more space is available for their display.

Chinese Art.—A Tray in painted enamel has been bought.

Burmese Art.—Eight enamelled Terra-cotta Slabs, from an old Burmese Temple, which show a style of decoration of which we had previously no examples, have been acquired; but it is not likely that Burmese objects will be purchased under ordinary circumstances

Lace and Embroidery.—These are very important collections, to which some additions have been made during the year, and which should be greatly increased. I hope soon to have more cases put up that the lace may be better shown, and it will be well to spend money liberally in order to get more really good specimens. It is unfortunate that the lighting of this room is not so good as it should be.

Paris Exhibition Specimens.—Some interesting objects were obtained from the Paris Exhibition; these consist generally of specimens of glass, china, and pottery, to show the modern styles as adopted on the Continent at such manufacturing centres as Paris, Limoges, Vienna, Buda Pesth, and Stockholm. They are very instructive, as showing the naturalistic treatment of foliage and flowers, the use of the figure for decorative purposes, and the remarkable tendency to flowing curves, which distinguish the styles of decorative art now in vogue on the Continent, and showing also the strong influence exercised by the Schools of Art of the United Kingdom. They are at present arranged as a special exhibit in the gallery of the Museum, and comprise two specimens of modern French furniture, a silver plate, by Christofle; some pewter, by Brateau; bronze, by Lerché; door furniture, after designs by Erikson and Carpenter; porcelain, including Italian modern majolica, by Castellani; Swedish porcelain and glass, including a vase of novel manufacture from the Kosta factory; Bustrion Irideseent glass, by Leotz, including some very fine blue colour glass decorated with painting and gilding, by Lobmeyr; and Hungarian pottery in a new style, with a metallic lustre, from the Zsolnay Factory.

The most important object, however, acquired from the Exhibition is the reproduction in terra-cotta, by the Signa Factory, of the Cantoria or Singing Gallery, by Donatello already mentioned. This is a magnificent work; the mosaics are reproduced, and the whole coloured like the original. Several portions were unfortunately broken in transport, so that it will be some time before this model can be erected in the Central Court.

Russian Peasant Industries.—A number of small objects were also purchased to illustrate the Russian peasant industries, as exhibited in the model Russian cottage, near the Trocadero. These are interesting, as they show the traditional crafts of the industrious Russian peasants, who make so many useful articles for their own cottages, and also toys and ornaments for sale. Some of the objects show what has been accomplished in centres where classes have been provided to instruct peasants (and it will be noticed that several of these products are of less artistic interest than those made by the untaught persons); and there are alsomore elaborately worked articles made in districts where special workshops have been established by landowners to improve the condition of the people.

Addresses to Queen Victoria.—During the last six weeks of the year 1900 there were exhibited the addresses which were presented to Queen Victoria on Her Majesty's visit to Ireland last spring, and which Her Majesty graciously sent to us for exhibition to the public; many of these were illuminated, and some of them were enclosed in gold or silver caskets, which were exhibited with them.

Ethnographical Collections.—One case has been completely re-arranged by Mr. Buckley on a system which I have introduced, and which will, I believe, utilise to the utmost the objects exhibited. The principle is that these objects are divided into eight classes, and a large explanatory label placed on each case.

The classes are:—

(*a*.) Implements for making fire;
(*b*.) Implements of war and chase;
(*c*.) Musical instruments;
(*d*.) Clothing;
(*e*.) Articles of domestic use;
(*f*.) Implements of agriculture;
(*g*.) Articles connected with religion;
(*h*.) Miscellaneous;

and the objects in each class are distinguished in the case by the corresponding letters on conspicuous labels, which are placed at each end of the group of objects. By this means the visitor can at once pick out any particular class of objects. For instance, on looking at the objects between the tickets marked A–A., he will find the implements for making fire used by the nation whose productions are shown in the case, and—when the whole of the cases have been thus arranged—by looking at the divisions marked A–A. in each of the cases the visitor will be able to see the various methods employed for making fire by all the different primitive races represented in the Museum, and so on for each other class of implements.

The work of arranging the collections in regular series, and fixing explanatory labels, so that the public may obtain from them the greatest possible amount of information, has, as usual, kept Mr. Longfield and his assistants hard at work during the year.

IRISH ANTIQUITIES.

A great deal of work has been carried on during the year by Mr. Coffey both in the Bronze Age Room, No. III., and the Christian Art Room, No. IV., though an immense deal remains to be done in both of these before there will be anything like a complete arrangement. In the latter room four cases of a new design have been provided, and these enable some of the finest objects in the collection, such as the Tara Brooch, the Ardagh Chalice, the Shrines and the Croziers, to be much better seen than was the case formerly, as the visitor is able to get very much closer to them. Many interesting specimens have been added to the collections during the year. As Mr. Coffey points out in his report, the question of procuring casts of inscribed stones and sculpture in Ireland is of great importance, and as I mentioned in my last year's report, it will be a very serious loss if the remains of Irish Romanesque Architecture scattered throughout the country are not modelled before they are still further damaged by time and weather, for if this is not done before many years have elapsed, many relics of this very interesting and beautiful variety of the Romanesque will be entirely lost to posterity.

ZOOLOGICAL COLLECTIONS.

The re-arrangement of cases on the Upper Gallery to take the lower forms of animal life has been completed and is very satisfactory; the reconstruction of the Bird cases on the Lower Gallery has been continued, and should be completed before the end of the coming financial year; and the next want is the provision of one or two more large cases for Mammals on the Upper Floor. I propose to make better arrangement of shelves in the cases for Irish Birds on the Ground Floor, and hope that, by exhibiting more specimens in each case, we may dispense with one row of cases altogether, and thus diminish the overcrowding which exist at present.

Several interesting additions were made to these collections during the year, but by far the most important was Mr. Ussher's collection of Irish Birds' Eggs, contained among which are many which have now become rare and practically unobtainable. For the purpose of showing the wide range of variation in clutches such as those of the peregrine falcon, the guillemot, and others, Mr. Ussher's collection is unequalled and invaluable. Much greater progress could be made with the arrangement and exhibition of the large numbers of new specimens obtained if an addition were made to the permanent staff. I think that the public interest in the Natural History collections is certainly increasing, and that larger numbers of boys and girls pay careful attention to them, and I believe that this alone would sufficiently justify us for having adopted the plan of making a separate collection of the Irish Fauna, which, very properly, is the part most interesting to young naturalists, as it leads them to note and take an intelligent interest in the animal life of our own country.

A "Shakespeare Case" has been placed in the lobby at the top of the stairs, containing specimens of the birds which were used in hawking, with label giving allusions to them in Shakespeare's Plays. It is hoped that this will be a further means of awakening greater interest in Natural History.

The collections showing the life-history and methods of destruction of various "Injurious Insects" are fairly complete, and I hope that these collections do much towards awakening in the minds of many persons an intelligent interest in some phases of animal life, which obviously and directly influence the success of agricultural operations; but I think that this exhibition in the Museum does not diminish the desirability of also circulating to schools throughout the country similar exhibits as well as collections to illustrate simple mechanical and artistic processes, as I suggested about a year ago.

BOTANICAL COLLECTIONS.

Professor Johnson, with the help of temporary assistants, has made great progress in the mounting and arranging of specimens in the Herbarium, especially of the large De Tabley Collection given by Lady Leighton, and also in arranging the economic botanical specimens or products of various countries which are useful in manufactures. The Botanical Department is very much crowded. It is now fairly provided with cases, but I am altering the old desk cases by doubling them up so that they slope up to the centre in a triangular form, thus considerably reducing the floor space occupied without reducing the show space.

Much of Professor Johnson's time has been very usefully occupied by the Department in enquiries connected with the flax, osier, tobacco, and other industries, and in studying the diseases of potatoes and other crops, as well as in carrying out the seed-testing which the Department has inaugurated at the Museum. As regards the tobacco, Professor Johnson was sent to the North of France to inspect the methods of cultivation there followed, and to obtain the services of a special expert in tobacco growing, who has since then been carrying on investigations and giving advice to growers under his directions. I have made special reports as to the need for permanent assistants in this department of the Museum, instead of the temporary assistants on which the Keeper has to depend at the present, and this has also been recommended by the Board of Visitors.

GEOLOGICAL AND MINERALOGICAL COLLECTIONS.

Professor Cole's principal work during the year has been the arrangement of the Irish minerals, to the number of which he has added very considerably. In the new wall-cases provided for them these now make a very fine exhibit, and with the collection of Irish ornamental and building stones, they show very fairly some of the great natural resources of this country. Whenever the temporary annexe sheds are rebuilt, it will be a matter of importance to provide properly for this branch of the Museum, as well as for the very fine fossil collections which are in them at present.

ROYAL COLLEGE OF SCIENCE.

As the Committee on the future requirements of the College has been sitting, very little has been asked for or executed in the way of improvements to the present building; but some slight alterations have been made to provide in the Physics laboratory temporary accommodation for the greatly increased numbers brought in by the Schemes for taking agricultural and other teachers. A noticeable fact during the past year was the unsatisfactory result of the examination of the fourteen students entered for the first year. Three of these were Royal Exhibitioners, one of whom left the College during the Session; the other two passing the Examination with credit, and one of them obtaining the Medal; but of the eleven remaining students who paid fees, only one passed the Examination fairly well, and took a Scholarship. Two others were permitted to pass a supplementaling examination in Mathematics, three left the College during the Session, and five failed to pass the Examination, and the results were so unsatisfactory that the second Scholarship was not awarded. This is only one more proof of what I have so frequently reported—namely, the unsatisfactory previous training of most of the students who come to the College.

Summer courses for teachers were again held in July, as in the previous year. They were well attended, and nearly all the students made the most of the opportunities afforded them; but it is evident that, as was found to be the case at the South Kensington College, these courses should be arranged to teach improved methods of instruction to those who already have a moderate acquaintance with the sciences taken up, for in the short space of three weeks or four weeks it is manifestly impossible to teach sufficient of any science to qualify as a teacher one who knows nothing of it to begin with. For such persons the courses for teachers now admitted with exhibitions, under the arrangements of the Department, are much more useful, and should in a few years provide throughout the country a nucleus of thoroughly equipped teachers in three or four of the sciences most needed.

These arrangements could not be made till after the close of the Session, but they give to a certain number of teachers courses of Physics or Chemistry to extend over one or three Sessions, the latter being very nearly the usual Associate courses. On the completion of the Session now in progress we shall be in a better position to judge of the results of this new departure. These teachers in training receive free tuition, and a maintenance allowance as granted to Royal Exhibitioners.

Arrangements have also been made for the students of the Royal Veterinary College of Ireland to join the College classes in Chemistry, Zoology, and Botany.

NATIONAL LIBRARY OF IRELAND.

I reported last year that the new room on the first floor of the unfinished wing had been completed, but could not be used until the attendants' tea and cloak rooms should be removed from the passage which leads to it. During the past year nothing has been done, and the room is still closed and useless.

The number of readers during the year 1900 was 148,405, and it may be interesting to note that the numbers for the British Museum Library for the year 1899 was 188,554, and for the National Art Library at South Kensington for the year 1899, 23,908. I think this shows what a very important function the National Library fulfils, and as has been pointed out by the Council of Trustees, and by me, the staff of this Library is far below that of the other great libraries with which we can compare it.

METROPOLITAN SCHOOL OF ART.

The School was attended during the Session 1899–1900 by 483 students, of whom 180 attended the day classes, and 303 the evening classes. In connection with this it may be interesting to note that the number of students at the Royal College of Art, South Kensington, for the Session 1899–1900 was 440. Fifteen students of the School obtained free scholarships by the works they sent up for Art Class Teacher's certificates, or by their success in the National Competition. I remarked last year that as so many of the more advanced students had left the School at one time it was no matter for surprise that no silver medals were won that Session, but this year a silver medal has been again obtained by Mr. William Whelan for an interesting series of drawings of chairs in different styles, and of all periods, and seven bronze medals have been obtained by Miss L. Deaue, design for lace; Miss Beatrice M. Elvery, modelled design for tobacco jar; Miss Louisa Evans, model from the cast; Miss Anna L. Jones, design for a portiere; Mr. John M'Dermott, ornament modelled from the cast; Mr. Thomas Mathers, figure modelled from the antique; Miss Emily Scott, flowers painted from nature.

Miss Beatrice M. Elvery, for her work at the examination in drawing from the life, was awarded a Queen's Prize.

For the selection from the students' work sent to the Paris Exhibition by the Department of Science and Art, a silver medal was awarded by the International Jury; at the Women's Exhibition held at Earl's Court last summer, at which all Schools of Art in the United Kingdom were invited to compete, three, out of the six prizes offered for designs for silk and for lace, were won by our students—the first prize for a silk dress by Miss Emily Scott, and the first and second prizes for lace designs by Miss Alice Jacob and Miss Emily Scott, respectively.

The demands made upon the designers in the school for work for lace and textile industries in different parts of the country were very large, and keep them constantly fully employed. The necessity of increased accommodation for this class must soon be seriously considered, and it will be convenient to consider at the same time whether room should be provided for instruction in some of the decorative handicrafts. I am persuaded that wo suffer in this country from insufficient opportunities for learning most artistic handicrafts, except, perhaps, lace-making and embroidery, and that if there is no immediate prospect of the establishment of separate schools for teaching such work and for supplementing the old system of apprenticeship, this duty should be undertaken at the School of Art.

Perhaps, as the systems of instruction in the elementary and secondary schools of the country are improved, and drawing generally recognized as a necessary branch of education, it will be possible to dispense with much of the elementary instruction which has till now been necessary in the School of Art.

The course of twenty lectures on anatomy by Professor Fraser was attended by thirty-one students, and Mr. Cecil Orr's lectures on Architecture was attended by thirty-two.

In July, for the first time, special summer courses in freehand and geometrical drawing and elementary design suitable to lace and embroidery workers were given to twenty-six National School Teachers and workers from various centres. The experiment was entirely successful. The students generally worked very hard and profited generally by the instruction given them, and I hope that this experiment may be repeated annually and perhaps extended.

The medals and prizes were distributed to the successful students on January 10th, 1900, by Her Excellency the Countess Cadogan.

A small but very varied collection of stuffed birds and a case of butterflies has been contributed by the Zoological Section of the Museum and forms a useful addition to the stock of models and examples for the students.

ROYAL BOTANIC GARDENS, GLASNEVIN.

These gardens were visited during the year 1900 by 407,770 persons. Of these over three-fifths—namely, 264,867, were Sunday visitors, which again shows the wisdom of having these gardens open on Sunday. Between April 1st, 1900, and March 31st, 1901, there were 420,259 visitors, of whom 277,023 came on Sundays. These numbers are a great increase on last year, when, as I pointed out in my report, they were very much lower than usual, owing to the want of means of communication with Dublin, consequent on the taking up of the tramway for the purpose of re-laying it. Allowing for this, however, it must be acknowledged that the high figures for the year 1900 are very remarkable, especially as the weather has generally been wetter than usual. The improvement in one respect, which I noted last year consequent on the erection of turnstiles at the entrance, continues to be very noticeable; but still a difficulty, which is yearly increasing, arises from the large number of perambulators and children's chaises brought into the gardens, which greatly encumber the paths and interfere with the comfort of other visitors. The institution of a system of passes has enabled better control to be kept over these than was formerly the case, but the numbers are increasing so rapidly, owing to the covering with artisans' dwellings of the open country which till recently surrounded the gardens, that some further steps will, ere long, have to be taken.

No works of importance have been carried out by the Board of Works during the year, and no steps have been taken to provide the house for tropical ferns which is so much needed, nor to improve the water supply. The addition of a night fireman to the staff, which was recently sanctioned, will greatly facilitate the keeping of the houses at a proper temperature during cold weather.

Whilst it is gratifying to record that the large numbers above-mentioned of the Dublin people and visitors from the country visit these Gardens, it is important not to forget the primary object for which they were instituted and are maintained, that is to say, to promote the study of botany by enabling students to see the vegetable products of all parts of the world as they grow, whilst they also teach practically the best methods of horticulture, and bring to the notice of the public new flowers, shrubs, and trees. Students of botany are regularly taken to the Gardens and given practical lessons by Professor Johnson, and the botanical laboratory in the Gardens has been fully utilized.

Thus the Botanic Gardens are a necessary complement to the College of Science and to the Herbarium of the Museum, while with the Art Collection of the latter is closely connected the School of Art, whose students constantly derive inspirations from the beautiful masterpieces of the great decorative artists of past times, whilst in the National Library, close by, they may obtain the knowledge without which many of these treasures cannot be understood or fully appreciated. It is to be hoped that as the years pass by the benefits to culture in its highest sense of these great Institutions will ever be more and more appreciated by the public.

G. T. PLUNKETT,
Director.

APPENDIX A.

REPORT of the DIRECTOR—INSTITUTIONS of SCIENCE and ART.

Months.	Totals, 1899.	1900. Week-days.		Sundays. 1900.	Totals, 1900.
		Morning.	Evening.		
January, 1900, .	31,925	24,895	2,610	4,137	31,642
February, „ .	30,268	20,259	1,947	5,770	27,976
March, „ .	34,786	24,982	2,668	6,319	33,969
April, „ .	39,759	27,833	2,776	7,513	38,122
May, „ .	36,753	25,789	2,814	4,692	33,295
June, „ .	32,811	31,159	2,667	3,907	37,733
July, „ .	37,048	29,863	2,683	5,458	38,004
August, „ .	48,961	39,386	3,207	4,823	47,416
September, „ .	38,152	28,838	2,603	4,964	36,405
October, „ .	35,345	27,405	2,676	6,207	36,288
November, „ .	29,616	25,317	2,366	4,941	32,624
December, „ .	28,504	24,924	2,052	5,434	32,410
Totals, .	423,928	330,650	31,069	64,165	425,884
January, 1901, .	31,642	25,350	2,989	4,716	33,045
February, „ .	27,976	21,330	2,352	5,419	29,101
March, „ .	33,969	23,575	1,823	5,820	31,218
Totals, .	517,515	400,905	38,233	80,120	519,248
15 Months.					

ROYAL BOTANIC GARDENS, GLASNEVIN.

Months.	Totals, 1899.	1900.		Totals, 1900.
		Week-days.	Sundays.	
January, . .	5,621	3,221	3,188	6,409
February, . .	15,428	5,309	6,061	11,370
March, . .	27,054	6,339	13,388	19,727
April, . . .	42,111	17,145	27,796	44,941
May, . . .	37,508	12,633	32,480	45,113
June, . . .	43,887	25,213	32,745	57,958
July, . . .	44,418	16,316	37,934	54,250
August, . .	44,328	14,921	26,467	41,388
September, .	29,475	19,902	39,723	59,625
October, . .	22,506	7,841	16,445	24,286
November, .	26,287	8,210	21,266	29,476
December, .	5,991	5,853	7,374	13,227
Totals, .	344,614	142,903	264,867	407,770
January, 1901.	6,409	4,888	2,683	7,571
February, „ .	11,370	4,154	7,717	11,871
March, „ .	19,727	6,160	24,393	30,553
Totals, .	382,120	158,105	299,660	457,765
15 Months.				

SUMMARY of Attendance at the various Institutions for 12 Months, from 1st April, 1900, to 31st March, 1901.

—	Number of Days open.	Total Attendance.	Daily Average.
Museum,	360	425,661	1,182
Botanic Gardens,	363	420,259	1,157
National Library,	291	147,195	505

Attendance for 12 Months, 1900.

—	Number of Days open.	Total Attendance.	Daily Average
Museum,	362	425,884	1,176
Botanic Gardens,	364	407,770	1,120
National Library,	293	148,405	507

The average Sunday Attendance was as follows:—

For 15 Months.	1900-1901.
Museum,	1,232
Botanic Gardens,	4,610

The highest and lowest attendances on Sundays were—

Museum, highest 21st October, 1900,	1,757
„ lowest, 2nd December, 1900,	811
Botanic Gardens, highest, 20th May, 1900,	8,783
„ lowest, 30th December,	308

The highest and lowest week-day attendances were—

Museum, highest, 26th December,	2,775
„ lowest, 2nd March,	593
Botanic Gardens, highest, 4th June, 1900 (Whit Monday),	9,030
„ lowest, 26th February, 1900,	23

SCIENCE AND ART MUSEUM.

APPENDIX II. TO DIRECTOR'S REPORT.

REPORT OF THE KEEPER OF IRISH ANTIQUITIES.

The number of objects added to the collections (including small collections registered under one head) was 215. Of these 75 were deposited by the Royal Irish Academy, and 140 given directly to or purchased by the Museum.

Amongst the most important of those deposited by the Academy were:—

An unusually large and fine Quern in working order, obtained by Mr. Seaton Milligan, M.R.I.A., in the Co. Cavan, and presented by him to the Academy.

A collection of flint arrow-heads and some other stone implements from the North of Ireland.

A very fine bronze sword found near Enniskillen, and two bronze swords and a bronze spear-head found at Ardara, Co. Donegal.

Two cinerary urns from the Co. Down.

A richly decorated gold "Lunula," or collar, found in the Co. Tyrone, unfortunately imperfect.

A stone mould for a Palstave, complete, in fine condition.

A highly decorated sepulchral food vessel and fragments of a cinerary urn; also a flint knife found with the urn, from the Co. Fermanagh.

The objects acquired directly by the Museum were chiefly for the comparative collection (in process of formation).

The more important are:—

A collection of stone and bone objects, obsidian flakes, and two skulls from the shell mounds at San Francisco, given by W. J. Warburton, Rostrevor, Co. Down.

An important collection of Palæolithic flint implements and bones of extinct animals from the river drift gravels at Bedford, given by G. Bligh, Monkstown, Co. Dublin. The collection includes 100 fine and characteristic specimens of Palæolithic implements, and many imperfect specimens; also a large quantity of broken flints and nodules of some interest as illustrating the material from which the implements were made.

A typical series of worked flints, part of the collection made by Mr. Seton Karr at the ancient flint mines in the plateaux of the Nile Valley. Bought from the Liverpool Museum.

Eleven specimens of Merovingian fibulæ, bronze inlaid with enamel, from the Forman sale.

The arrangement of the Bronze Age Collections is proceeding. The additional cases recently obtained renders it now possible to make a rapid advance in the arrangement of that part of the collection, and I expect to be able, in the course of the coming year, to divide a considerable portion of the material into periods, preparatory towards a final chronological arrangement. The re-arrangement of the Gold Collection has already been taken in hand, and the earlier portion of this collection is now in chronological position.

The re-arrangements of the Bronze Room will enable that of the ecclesiastical and medieval collections to be proceeded with more systematically. The large collection of prehistoric sepulchral pottery at present in the latter room will shortly be placed in the Bronze Age room, where cases are in course of preparation for it. The space thus set free will enable many ecclesiastical and medieval objects at present scattered through the collections to be brought together in their proper place. The new cases in the Medieval room have given much satisfaction. The re-arrangement of the collection of croziers is nearly finished. This will complete the re-arrangement of the shrines and early ecclesiastical metal work for which these cases were made.

The fitting of a portion of the basement as a laboratory is badly needed. At present the conservation of antiquities has to be carried on by makeshifts. A laboratory with washing troughs, heating arrangements, sand baths for drying, &c., would greatly facilitate this work. The treatment of bronze and iron objects with solutions, &c., to arrest decay cannot be adequately done until a laboratory is provided.

The question of procuring casts of prehistoric and medieval sculptured stones is deserving of immediate attention. One of the most important series in Europe of archaic inscribed markings of the Bronze Age exists in Ireland, notably, in the prehistoric cemeteries of the Boyne and Lough Crew, Co. Meath. A large literature exists on the subject of these markings, and it is important that the more important examples should be cast before they suffer further loss from weathering. The casts could be effectively exhibited on the walls above the cases as in the Gavrinis Room at St. Germain, or, when necessary, stacked in racks, on casters, as at Edinburgh.

(Signed), G. COFFEY.

APPENDIX III. TO DIRECTOR'S REPORT.

REPORT OF THE KEEPER OF THE ART AND INDUSTRIAL SECTION.

During the year 1900 and portion of 1901 considerable additions have been made, by purchase, to the collections, and especially to that of Furniture, including several pieces of French Furniture of the eighteenth century, in Boule, Marquetry and carved wood, and a sixteenth century carved-wood chest (Normandy).

An Italian table, inlaid with brass, ivory and mother-of-pearl, formerly in the Bernal Collection, and an English painted satinwood table, eighteenth century.

A fine fourteenth century Arab Mosque lamp, and a collection of Persian tiles were obtained from the Myers Collection.

The copy of an ancient Greek enamelled gold monile in the British Museum, and other specimens of gold work, were purchased from Messrs. Giuliano, of London, and a repeater watch in case of repousse and chased gold by Benjamin Sidey (Master of the Clockmakers' Company in 1761) has also been acquired.

Several specimens of English and Irish silverwork of the eighteenth century have also been added to the collections. Some interesting pieces of Italian Majolica and an important Japanese vase were secured for the Pottery and Porcelain Collection.

Specimens of enamelled pottery, porcelain, glass, bronze, and pewter, and a collection of objects selected from the Russian Peasant Industries, purchased at the Paris Exhibition, have been placed on view in the Gallery of the Central Court and in the annexe.

Three cases (containing 108 frames) of Postage Stamps—the Leinster Collection, with additions—have been placed in the Gallery of the Central Court, where they form a very attractive feature. They have been arranged by Mr. William R. Lane Joynt, to whom the Museum is much indebted for bestowing on them much time and care.

The wall cases in the Pottery and Porcelain Rooms have been lowered, which makes them much more useful, and also increases the wall-spaces over them, on which large or framed specimens can be exhibited.

Mr. Buckley was unable to make much progress with the re-arrangement of the Ethnographical Collections in consequence of the large amount of work done by him in the labelling, registration of specimens, and other routine work.

Mr. Alabaster is preparing a guide to the Pottery, Porcelain and Glass Collections, which will be of great assistance to persons visiting these collections, for the proper exhibition of which more space is much required.

The Egyptian Collection is being re-arranged and catalogued by Miss Margaret Murray.

Among the donations to the Museum may be specially mentioned eight enamelled-pottery reliefs, from an ancient Buddhist Temple in Burma, presented by A. M. B. Irwin, Esq., I.C.S.; three specimens of gold work, presented by Messrs. Giuliano, of London; eight specimens of old pillow laces, presented by T. J. Westropp, Esq., M.A.; collections of Peruvian antiquities, presented by J. W. Carpenham, Esq., and Dr. J. Desmond M'Carthy; and reproductions of prints in the British Museum, Part IX., presented by the Trustees.

I forward herewith lists (1) of the principal acquisitions by purchase, (2) of the Donations, and (3) of the loans.

(Signed), THOMAS H. LONGFIELD.

LIST OF THE MORE IMPORTANT ACQUISITIONS FOR THE SCIENCE AND ART MUSEUM (ART AND INDUSTRIAL SECTION).

Furniture:

Copy of Oak Armchair, probably fourteenth century.
Copy of Oak Armchair. English, 1670.
Painted satinwood Console Table.
Chippendale Mirror.
Carved Oakroom Panelling. French, Louis XV. period.
Carved oak Door and Frame. French, Louis XVI. period.
Oak Chest. Norman, sixteenth century.
Armoire, carved oak. French, sixteenth to seventeenth century.
Armoire, carved oak. French, Louis XV. period.
Carved oak Wardrobe. Calavdos.
Mahogany Loo Table.
Italian walnut Table, inlaid with ivory, mother-of-pearl, &c.
Boule-work Cabinet, ebonized wood and brass.
Marquetry Cabinet, signed "Leleu."
Secretaire, bonheur-du-jour. French.
Copy of sixteenth century French oak Table.
Corner Chair. English, eighteenth century.
Commode. Boule-work.
Bombé Commode, rose-wood with brass mountings.
Copy of Louis XVI. Armchair.
Terminal Figure, carved wood. Adams's style.

Pottery, Porcelain, and Glass:

Antique Greek painted Vases.
Two Tanagra Statuettes.
Collection of Romano-British Pottery.
Collection of Cypriote Pottery.
Collection of Turkish and Persian Wall Tiles.
Reproduction of Panel of Damascus Tiles.
Collection of Italian Majolica.
Chinese Porcelain Plate with figures of deities.
Chinese Porcelain Vase and Cover.
Chinese Porcelain Cup and Saucer, painted—"The Resurrection."
Chinese Porcelain Cup and Saucer, painted and gilt.
Japanese Porcelain (Imari) Vase and Cover.
Japanese Porcelain Dishes (2).
Japanese Porcelain Teapot.
Wedgwood Ware Coffee Can and Saucer, black, white, and yellow.
Wedgwood Ware Cup and Cover, blue and white.
Wedgwood Ware Bowl, green and white.
Wedgwood Ware Candlestick, silver lustre.
Wedgwood Ware Vase, black basalt.
Wedgwood Ware Inkstand, yellow and blue.
German Stoneware Ewer.

- Pair of Worcester Porcelain Dishes.
- Group—Venus and Cupid—Porcelain.
- Arab Mosque Lamp, enamelled and gilt glass.
- Small collection of Arab and Palestine Glass.
- Snuff Bottle of Chinese cameo glass.
- Tassie Medallion—Admiral Howe.

Silver and Plated Ware :
- Silver Dish-ring (copy). Irish.
- Silver Dish-stand. Irish.
- Silver Chalice and Paten. Irish.
- Silver two-handled Cup. Irish.
- Silver Sugar Bowl. Irish.
- Silver Soup Ladle. Irish.
- Silver Sauce Boat. Irish.
- Silver Sauce Boat. Irish.
- Silver Spirit-lamp and Stand. London.
- Silver Spirit-lamp and Stand. London.
- Silver Candlestick. London.
- Silver Snuff-box. Amsterdam.
- Plated Dish-ring.
- Plated Tea-urn

Lace and Embroidery :
- Collar of Carrickmacross Appliqué and Guipure.
- Border of Fausse, Valenciennes.
- Fichu of Italian Raised Point.
- Two pieces of Drawn and Embroidered Work.
- Linen border with silk embroidered Openwork.
- Pair of Curtains, Crewel-work.

Musical Instruments :
- Harp, by *Egan*, Dawson-street, Dublin
- Zither, by *Perry*, Kilkenny.
- Double Flageolet, by *Ellard*, Dublin

Jewellery, &c. :
- Monile. Copy of Greek original in British Museum.
- Pendant (head of Jupiter) and Neck-chain, by Giuliano.
- Brooch and Ear-rings, gold and cornelian, by Giuliano.
- Gold Ear-rings, figure of Victory, by Giuliano.
- Brooch, gold and enamel, by Giuliano.
- Shoulder Brooch, by Giuliano.
- Gold Repeater Watch, by Sidey. English, eighteenth century.
- Silver and tortoise-shell Snuff-box.

Miscellaneous :
- Gold Coins of Hadrian, Antoninus, Valentinianus II., Justinus, and Mauricius Tiberius.
- Navette, copper, gilt. Italian, fifteenth century.
- Cardinal's Ring, bronze. Italian, fifteenth century.
- Twelve Models, in wax, by Smyth the sculptor, for the masks emblematic of the rivers of Ireland on the arches of the Custom House.
- Embroidered Bookbinding. German, early seventeenth century.
- Red Morocco Binding. French, sixteenth to seventeenth century.
- Bronze Mortar. Dutch, dated 1639.
- Chinese painted enamel Tray.
- Two Limoges enamel Plaques.
- Four Battersea enamel Boxes.

OBJECTS PURCHASED AT THE PARIS EXHIBITION.

- Vase, glass. French (Pantin Crystallerie).
- Cup and Saucer, porcelain. French (Alluand, Limoges).
- Two Panels of Wall-tiles, enamelled pottery. Italian (Castellani, Rome).
- Wall-tile enamelled Pottery. Italian (Castellani, Rome).
- Two Dishes, enamelled pottery. Italian (Castellani, Rome).
- Three Vessels, enamelled pottery. Hungarian (Zsolnay).
- Wineglass, painted and gilt. Austrian (Lobmeyr, Vienna).
- Three pewter Vessels. French (Jules Brateau, Paris).
- Bust of a Lady, terra-cotta. Italian (Signa, Florence).
- Collection of objects—carved wood, &c.—illustrating Russian Peasant Industries.

Two bronze Vases. French (St. Lerche, Paris).
Two pewter Vessels. French (St. Lerche, Paris).
Silver Baptism Plate. French (Christofle, Paris).
Collection of Lock-plates, Knobs, &c., silvered and gilt metal. French (Paris, designs by Charpentier and Eriksson).
Two Vases, porcelain. Swedish (Rorstrand, Stockholm).
Two Vases, porcelain. Swedish (Gustafsburg, Stockholm).
Three Vessels, pottery. Hungarian (Zsolnay).
Vase, cameo glass. Swedish (Kosta, Stockholm).
Four Vessels, glass. Austrian (Loetz).

II.

LIST OF DONATIONS TO THE SCIENCE AND ART MUSEUM (ART AND INDUSTRIAL SECTION) FOR THE YEAR 1900.

Gold and Moonstone Brooch. Modern.
Gold Bulla or Shoulder Brooch. Modern Roman.
Gold Pendant and Ear-rings. Etruscan design.
C. and A. Giuliano.
Miniature Portrait: A lady. Irish. Eighteenth century.
Miss Charlotte Henry (per Mrs. Ferguson).
Duelling Pistol. Early nineteenth century.
H. E. M'Dowell, Esq.
Portion of Silk Armorial Band. Italian.
Miss Warren.
Small carved ivory Plaque. Spanish, seventeenth century.
Robert Mannix, Esq.
Six specimens of Old Pillow Lace.
T. J. Westropp, Esq., M.A.
Arawak Indian Girdle.
Lord Walter Fitzgerald.
Plaster cast of portion of the Grey Monument, York Minster.
Six casts of Armorial Slabs in Dersingham Church, Norfolk.
Victoria and Albert Museum.
Gilt brass Button, made for visit of George IV. to Ireland in 1821.
Mr. J. V. M'Alpine.
Cannon Ball from excavations near Waterford.
A. E. Greaves, Esq.
Eight enamelled terra-cotta Slabs, from an old Buddhist Temple in Burma.
A. M. B. Irwin, Esq., I.C.S.
Small fragments of Old English Crewel Work.
Miss Fishbourne.
Two stone Pestles. Hawaii.
James Bennett, Esq.
Five-dollar Note. Alabama, 1864.
Henry Loughnan, Esq.
Wedgwood Teapot.
Frederick Rathbone, Esq.
Water-bottle, from the Soudan.
Miss L. Stephens.
Collection of Peruvian Antiquities: Pottery, Bronze, &c.
J. Desmond M'Carthy, Esq., C.M.G., M.D.
Collection of Peruvian Antiquities: Textiles, &c.
J. W. Carpenham, Esq.
Reproductions of Prints in the British Museum. Part IX.
The Trustees of the British Museum.
Two stamped Bricks, from a Burmese Temple.
A. M. B. Irwin, Esq., I.C.S.
Collection of casts of Medals, Coins, &c.
Tray of Specimen Marbles.
Miss Mayne.
Small Tray. Modern Italian Majolica.
Signor Castellani.
Bronze-gilt Medal: Visit of Her Majesty the Queen to Ireland, 1900.
Edmond Johnson, Ltd.

Four specimens of Antique Glass, from Nazareth.
Geo. F. Lawrence, Esq.
Book: Buddhist Text in Pali-Burmese on palm leaf.
Mrs. Sharman Crawford.
Goblet, pewter.
M. Jules Bratean.
Scotch Bank-note—One pound. 1813.
Lady's Satchel. Early nineteenth century.
Sampler. Early nineteenth century.
Collection of Lady's Costume. Early nineteenth century.
Miniature of a Lady.
Lady's Workbox.
Small ivory Carving (fragment).
Pair of Cornelian Ear-rings.
Miss Frazer.
Two Javelins.
Womera.
Nnlla Nnlla.
Two Boomerangs.
S. J. Hyde, Esq.
Piece of printed Cotton, with portraits of King George III., Queen Charlotte, and family.
Hon. Gerald Ponsonby.

III.

LIST OF LOANS TO THE SCIENCE AND ART MUSEUM (ART AND INDUSTRIAL SECTION) DURING THE YEAR 1900.

War Drum, from Wateita, E. Africa.
War Helmet, from Wateita, E. Africa.
Dr. John G. Cookman.
Two Field Guns.
Four small brass Guns.
One Spanish brass Gun.
Field-Marshal Lord Roberts, V.C.
Two pieces of Antique Lace.
Mrs. Gould.
Collection of Cypriote Antiquities: Pottery, Glass, &c.
Lieut.-Col. and Mrs. Kenny.
Silver Chalice and Paten.
John Mulhall, Esq.
Haida Indian Slate Pipe.
J. R. Robertson, Esq.
Collection of Objects from Omdurman: Arms, Armour, &c.
Lieutenant E. A. Plunkett.
Collection of Arms, &c., from the Tirah Campaign.
Capt. A. W. V. Plunkett.
Collection of Marquetry, and other Furniture, Mirrors, &c.
Mrs. E. M. Tatlow.
Collection of Tibetan Metal-work, &c.
Major G. Chevenix Trench.
Specimen of Belfast Delftware. Dated 1724.
Erskine Quinn, Esq. (per Col. Hopton Scott).
Two specimens of Chinese Porcelain.
Four pieces of enamelled Pottery.
W. Maddock, Esq.
Carved oak Armoire. French, seventeenth century (restored).
Carved oak Chest. English.
Mrs. A. O. Stack.
The Addresses presented to Her Majesty the Queen on the occasion of her visit to Ireland in 1900.
The Under-Secretary for Ireland.
Three Floats from the Coast of Bolivia.
Mrs. Hawes.
Silver Rosary Beads. Spanish (?), seventeenth century.
Chinese Porcelain Vase.
O'Meara Conyngham, Esq.

APPENDIX IV. TO DIRECTOR'S REPORT.

REPORT OF THE KEEPER OF THE NATURAL HISTORY COLLECTION.

The reconstruction of the cases on the First Gallery, and the work of fixing additional cases in the Upper Gallery, has proceeded steadily; but until both of these undertakings are finished the re-arrangement of the Natural History Collections cannot be completed. No additions to the permanent staff have been made, though the necessity of doing so has been pointed out in previous Reports. Meanwhile, a few temporary Assistants have been engaged from time to time in helping me with some of the most urgent work. Mr. Farran assisted in the re-arrangement of the Collections, while Miss Pike aided in the technical work.

The most important acquisition of the year is the Ussher Collection of Birds' Eggs. The majority of the eggs were collected in Ireland by Mr. Ussher himself, and include many unique and beautiful varieties, especially among the eggs of the Peregrine Falcon, Chough, Guillemot, and Razorbill.

In the spring of last year I was allowed to attend one of Stevens' sales in London, where I secured some very rare Irish Lepidoptera. This spring I had an opportunity of visiting several German Museums, and also dealers. Among other interesting purchases may be mentioned a foal of a variety of Burchell's Zebra, not hitherto represented in the Museum. A good number of native Irish Birds were bought to replace specimens which had suffered from exposure to light and other causes.

Several applications for duplicate specimens were again received this year, and we were able to send, on loan, a very large collection of stuffed specimens and skeletons to the Museum at Queen's College, Galway. Several smaller collections were lent to Dublin schools.

It is to be hoped that the evidently increasing public interest in Natural History may induce the Irish school authorities to appoint teachers in Zoology and kindred sciences. The educational value of these sciences, especially in fostering habits of observation among children, has long ago been recognised in England and on the Continent, where they are taught in all the more important schools.

The following scientific papers, most of which are descriptive of specimens in this Museum, were published by the members of the Natural History staff during the year :—

R. F. Scharff.

A List of the Irish Cetacea.
"Irish Naturalist," vol. ix., pp. 87–91.
The Irish Species of Land-Planarians.
"Irish Naturalist," vol. ix., pp. 215–218.
Rhynchodemus Howesi, a new species of Planarian Worm.
"Linnean Society's Journal (Zoology)," vol. 28, pp. 33–42.
Mormopterus Whitleyi, a new species from W. Africa.
"Annals and Magazine, Natural History" (ser. 7), vol. 6, pp. 569–570.

A. R. Nichols.

A List of the Marine Mollusca of Ireland.
Proc. R. Irish Acad. (3), vol. 5, pp. 477–662.

G. H. Carpenter.

Collembola, from Franz-Josef Land.
Scient. Proc. R. Dublin Soc., vol. ix., pp. 271–278.
Pantopoda, from the Arctic Seas.
Scient. Proc. R. Dublin, Soc., vol. ix., pp. 279–282.
Report on Economic Entomology in Report of Council R.D.S., 1899.
The Re-arrangement of the Natural History Collections in the Dublin Museum. Report Museums Association, 1899.
Two Spiders new to the British Fauna.
"Annals and Magazine, Natural History" (ser. 7), vol. 6, pp. 199–204.

The Warble Fly.
  "Journal," Department Agriculture and Technical Instruction, Ireland, vol. i., pp. 89–92.
The Turnip Fly and Wireworms.
  "Journal," Department Agriculture and Technical Instruction, Ireland, vol. i., pp. 221–227.

J. N. Halbert.

A New Water Mite from Ulster.
  "Irish Naturalist," vol. ix., pp. 94–96.
Some Addition to the Beetles of the Dublin District.
  "Irish Naturalist," vol. ix., pp. 278–284.

(Signed), R. F. SCHARFF.

LIST OF DONATIONS TO THE NATURAL HISTORY COLLECTION.

Ussher, R. J.
  Stock Dove, from Co. Carlow.
Otway, A. L.
  Small collection of Bird Skins, from Co. Waterford.
Stears, S. M.
  Tawny Owl, shot in Co. Down.
Hely-Hutchinson, G. W.
  Argulus foliaceus, L., from Co. Cavan.
Bedford, the Duchess of.
  Horns of Père David's Deer (*C. Davidianus*), from N. China.
Williams, E.
  Left Horn of Reindeer, from Scandinavia.
Grierson, P. H.
  Lesser Horse-shoe Bat, from Co. Clare.
Patten, Dr. C. J.
  Herring Gull, Knot, and Dunlin, from Dublin Bay.
Smith, Dr. W. G.
  Fridericia sp.
Metcalfe, J.
  Sparrow Hawk, from Co. Antrim.
Patten, Dr. C. J.
  Common Redshank and Redbreasted Merganser.
Warren, R.
  Galathea squamifera, &c., from Killala Bay.
Duerden, Dr. J. E.
  Peripatus, from Jamaica.
Bennie, H. M.
  Lepidurus glacialis, from Pleistocene Leaf-deposits.
Osterrieth, Mrs. E.
  Some Shells, Shark's Teeth, &c., from Crag of Antwerp.
Brooke, Sir D.
  Skulls of *Capra ægagrus*, Gm., from Donegal.
Flemyng, Rev. W. W.
  Small collection of Lepidoptera, from Europe, India, &c.
Ovenden, Miss E. G.
  Petrognatha gigas, from Uganda.
Greene, Miss E.
  Barn Owl, from Co. Kildare.
Barlow, Miss.
  Egg of Common Duck, enclosing a smaller egg.

Robertson, J. G.

Variety of Blackbird (*Turdus merula*) from Co. Dublin.

Westropp, D.

Small collection of Insects from Ireland and S. Africa.

Pim, Miss.

Nest of Weaver Bird (*Ploceus*) from India.

Bryan, W. H.

Small collection of Fossils from Co. Limerick.

Barrow, Miss K.

Small collection of Lepidoptera from Sikkim.

King, J. J. F. X.

Small collection of British Insects.

Mahon, J.

Collection of Lepidoptera from South Africa.

Scriven, Dr. G.

Wood injured by *Mesites Tardyi* from Co. Dublin.

Delap, Miss M.

Variety of House Mouse (*Mus musculus*) from Valentia Island

Gill Rev. F. M.

Spider (*Dolomedes fimbriatus*) from King's County.

Smyly, J.

Chipmunk (*Tamias striatus*) from N. America.

Williams, E.

Puss Moth (*Cerura vinula*) from Dublin.

Academy, Royal Irish.

Collection of Invertebrates from Lough Neagh.

Randell-Jackson, A.

Collection of Spiders from the North of England.

Mason, G. E.

Collection of Arachnids from Tennessee and Ireland.

Cambridge, Rev. O. P.

Agelena nævia from Canada.

Battersby, Mrs.

Dolomedes fimbriatus from Westmeath.

Boxer, Capt.

Peahen (*Pavo cristatus*).

Reynell, Miss.

Small collection of Lepidoptera.

Loughnam, H.

Slough of Coachwhip Snake (*Coluber obsoletus*) from Texas.

Warburton, J.

Moth (*Erebus odora*) from off Ecuador.

M'Clean, Rev. Dr.

Small collection of Lepidoptera from West of Ireland.

Thompson, Prof. D'A. W.

Armadillidium Pallasii from Italy.

Mulvey, N.

Nightingale (*Daulias luscinia*) from Ely.

Academy, Royal Irish.

Collection of Insects and Spiders from the Cos. Waterford and Cork.

Wall, A. B.

Acherontia atropos from Co. Wexford.

Mahony, Pierce.

Skeleton of Frog (*Rana*).

Rothschild, N. C.

Cimex pipistrelli from Toome.

Academy, Royal Irish.

Collection of Insects and Spiders from Wexford.

Mulvey, T.

Corncrake (*Crex pratensis*) from Co. Dublin.

Keane, H.

Young Rook (*Corvus frugilegus*) from Co. Waterford.

Keane, J. E.

Human Skull from Co. Dublin.

Geoghegan, H.

Specimens of *Aptychus* from Kimmeridge Clay.

Whitley, Dr. J. C.

Collection of Terrestrial Vertebrates and Invertebrates from W. Africa.

Holt, E. W. L.
Collection of Marine Vertebrates and Invertebrates from the West coast of Ireland.

Adair, J. O.
Brambling (*Fringilla montifringilla*) from Co. Carlow.

Dobbs, J.
Collection of Fossil Fishes, &c., from Castlecomer.

Rathborne, H. B.
Small collection of Butterflies from Switzerland.

Wolfe, J. J.
Pupæ of *Colias edusa* from Skibbereen.

Academy, Royal Irish.
Collection of Marine Shells from Donegal and Kerry.

Bellingham, Sir H.
Crania and bones of *Cervus giganteus* from near Castlebellingham.
Skull and bones of Bottle-nosed Whale (*Hyperoodon rostratus*)

Scharff, R. F.
Rhynchodemus Howesi from the Pyrenees.

Fitzgerald, Lady.
Collection of Bird Skins from S. America.

Alcock, N. H.
Small collection of Bat Parasites from Ireland.

Hamilton, W. A.
Gorgonia verrucosa from Donegal Bay.

Lydon, J.
Small collection of Fishes from Roundstone.

Browne, E. T.
Collection of Medusæ, &c., from S.W. of Ireland.

Moore, F. W.
Rhynchodemus Scharffi from Glasnevin.

Jones, E. W. A.
Two Long-tailed Ducks (*Harelda glacialis*) from Lough Corrib.

Welch, R.
Small collection of Insects and Spiders from Ireland.

Ward, R.
Head of Reed-Buck (*Cervicapra arundinum*) from S.E. Africa.

Bradshaw, Miss.
Abnormal Egg of Turkey from Co. Meath.

Barrett, C. G.
Argyritis tarquiniella and *Tinea confusella* from Co. Dublin.

Kane, W. F. de V.
Collection of Microlepidoptera from North of Ireland.

Fagan, J. P.
Skull of African Elephant (*Elephas africanus*) from W. Africa

Mahony, Pierce.
Skeleton of Kerry Cow (*Bos taurus*).

Ferguson, Capt.
Skin of Bustard (*Neotis*) from Lake Rudolph.

Tate, Capt. G. W.
Collection of Lepidoptera from Sierra Leone.

Sidley, Rev. F. de B.
Skin of Fruit-eating Bat (*Pteropus*) from Australia.

Thompson, Dr. R. N.
Ringed Snake (*Tropidonotus natrix*) from Greystones.

Ward, R.
Three Legs of Zebra from S. Africa.

Patterson, R.
Stenus palposus, &c., from Lough Neagh.

Moore, F. W.
Bipalium Kewense from Botanic Gardens, Glasnevin.

M'Ardle, Capt. J.
Skulls and Horns of Red-fronted Gazelle (*G. rufifrons*) and Heuglin's Gazelle (*G. tilonura*) from Africa.

Brenan, Rev. S. A.
Spawn of Aplysia from North of Ireland.

Smith, Miss.
Small collection of Lepidoptera from Vancouver.

Dunlop, K. M.
Young Cuckoo (*Cuculus canorus*) from Lucan.

Calman, W. T.
Bosmina coregoni, var. typica, from Dumfriesshire.

Tamlin, W.
Caterpillar of *Acherontia atropos* from Wicklow.

Ussher, R. J.
Wax-bill (*Estrelda cinerea*).

Deane, F.
Crossbill (*Loxia curvirostra*) from Co. Fermanagh.

Casement, R.
Puff Adder (*Bitis arietans*) from Cape Colony.

Mahony, Pierce.
Chameleon vulgaris.

Rothschild, Hon. N. C.
Nycteribia from Bundoran.

Farran, G. P.
Small collection of Coleoptera from Co. Dublin.

Stewart, J.
Black Tern (*Hydrochelidon nigra*) from Limerick.

Barrett, C. G.
Nonagria brevilinea from Norfolk.

Chaster, G. W.
Anodonta cygnea from Preston.

Oldfield, Thomas.
Skulls and Skins of Rodents from India and Mexico.

Burhidge, F. W.
Common Heron (*Ardea cinerea*) from College Botanic Gardens.

Grant, Col. C. C.
Collection of Fossils from Canada.

Welch, R.
Patella encrusted with Lithothamnion from Bundoran.

Allingham, H.
Snow Bunting (*Plectrophanes nivalis*) from Ballyshannon.

Flemyng, Rev. W. W.
Collection of Lepidoptera from Canada.
Oenistis quadra from Co. Waterford.

Academy, Royal Irish.
Collection of Insects, &c., from the Cave of Dunmore.

Marshall, J. T.
Myrina Simpsoni from the Great Fish Bank.

Mahony, Pierce.
Shed Antlers of *Cervus giganteus* from Co. Kerry.

Otway, A. L.
Remains of Red Deer from Co. Wexford.

Pearsall, W. B.
Casts of Teeth of *Pithecanthropus erectus.*

Hely-Hutchinson, G. W.
Neomysis vulgaris from coast of Donegal.

Simpson, W.
White variety of Chaffinch from Londonderry.

Ball, C. B.
Collection of Marine Invertebrates from Lough Swilly.

Otway, A. L.
Bullfinch, Greenfinch, and Great Tit, from Co. Waterford.

Patten, C. J.
Dunlin and Ringed Plover from Co. Waterford.

Ussher, R. J.
Grey Wagtail from Co. Waterford.

LOANS.

Cookman, Dr. J. G.
Collection of Heads of East African Mammals.

Roberts, Lord.
Head of Indian Buffalo (*Bubabus buffelus*).
Head of Indian Rhinoceros (*Rhinoceros unicornis*) from Kuch Behar.

Manchester Regiment.
Head of African Rhinoceros (*Rhinoceros bicornis*) from Uganda.

Brooke, A.
Rose-coloured Pastor (*Pastor roseus*) from Killybegs.

Hugo, T. N.
Pectoral Sandpiper, shot at Belmullet.

DONATIONS OF BOOKS AND PAMPHLETS.

Dublin Society, Royal.
Index to the Scientific Proceedings of the Royal Dublin Society from 1877 to 1898, inclusive.

American Museum, Trustees of.
Bulletin, vol. xi., part ii.

Carpenter, G. H.
Pamphlet.

Patten, C. J.
Pamphlet.

Dublin Society, Royal.
"Jamaican Actiniaria." Sc. Trans., vii. (2).
An Estimate of the Geological Age of the Earth." Sc. Trans. vii. (2).

Indian Museum, Trustees of.
A Guide to the Fish Gallery of the Indian Museum.

Dublin Society, Royal.
"On Pithecanthropus erectus," Sc. Trans. iv. (2).

Australian Museum.
Records. Vol. iii., No. 6.

Thornely, L. R.
Pamphlet.

Dublin Society, Royal.
"Report on the Crustacea Schizopoda of Ireland," Sc. Trans. vii. (2).

Janet, C.
Nine Pamphlets on Ants, &c.

Scharff, R. F.
"A List of the Irish Cetacea."

Harmer, S. F.
Pamphlet.

Indian Museum, Trustees of.
"Illustrations of the Shallow-water Ophiuroidea."

American Museum, Trustees of.
Bulletin, Vol. XII.

Australian Museum, Trustees of.
Records. Vol. III., No. 7.

Richard J.
Pamphlet.

Hoyle, W. E.
Two Photographs.

Buchner, O.
Three Pamphlets.

British Museum, Trustees of.
"The Cretaceous Bryozoa." Vol. I.
"Monograph of Christmas Island."
"Catalogue of the Lepidoptera Phalænæ in the British Museum, Vol. II.

Castle, W. E.
Pamphlet.

Workman, T.
Malaysian Spiders. Vol. I.

Wallace, R. H.
Pamphlet.

Stebbing, T. R. R.
Pamphlet.

Calman, W. T.
Pamphlet.

Ihering, H., von.
Revista Musea Paulista. Vol. IV.

Millport Marine Biological Station, Committee of.
Communications. I.

BOOKS.

Indian Museum, Trustees of.
    Pamphlet.
Pfeffer, G.
    Pamphlet.
Thompson, I. C.
    Eight Pamphlets.
Australian Museum, Trustees of.
    Records. Vol. III., No. 8.
Scharff, Dr. R. F.
    Seventy-two Pamphlets by various authors.
American Museum, Trustees of.
    Bulletin. Vol. XI., Part 3.
Hartlaub, C.
    Pamphlet.
Norman, A. M.
    Two Pamphlets.
Irish Inland Fisheries Commission.
    Report. Dublin, 1901.
Dublin Society, Royal.
    Index to Scientific Proceedings.
Academy, Royal Irish.
    Proceedings.
Hedley, C.
    Pamphlet.
Hoyle, W. E.
    Two Pamphlets.
Smithsonian Institution.
    Bulletin.
    American Hydroids.
"Irish Naturalist," Editors of.
    Two Pamphlets.
Foord, A. H.
    Monograph of the Carboniferous Cephalapoda of Ireland. Parts 2 and 3.

APPENDIX V. TO DIRECTOR'S REPORT.

REPORT OF THE CUSTODIAN OF MINERALS.

During the year an interesting series of specimens has been purchased from the collection of the late Dr. W. Frazer, of Dublin, including a number of Irish minerals and a handsome specimen of yellow Pyromorphite from Cumberland. Miss Going has presented several specimens from the collection of the late E. Mayne, Esq., of Dublin. Several rare minerals, hitherto unrepresented in the Museum series, as well as examples of newly discovered species, have been purchased. Among striking additions, a large crystal of smoky quartz from the St. Gotthard, and a richly-coloured mass of Amethyst from Brazil are worthy of mention. The two additional cases provided for the Irish Mineral Collection have allowed of the exhibition of the specimens in a highly satisfactory manner. This series has been enlarged by various gifts, including a set of more than 100 samples of rocks assayed for gold, presented by Mr. E. St. J. Lyburn, A.R.C.SC.I., and by the transfer of a number of important specimens from the Royal College of Science for Ireland.

Through the assistance of Mr. Lyburn, the Irish Collection has been labelled throughout, while the general Rock Collection is now nearly complete in this respect. The large raised model of Ireland, on the scale of one inch to a mile, has been repainted, the geological features being revised in accordance with the recent work of the Government Survey.

It should be mentioned that the general collection of minerals suffers considerably from the large amount of dust and soot blown in through the roof of the temporary building in which it is exhibited. The raised model of Ireland, though protected at night, becomes injured in a still greater degree.

(Signed), GRENVILLE A. J. COLE,

APPENDIX VI. TO DIRECTOR'S REPORT.

REPORT OF THE KEEPER OF THE BOTANICAL COLLECTION.

I beg to enclose herewith my Report on the Botanical Collections for the year 1900, together with a list of donations.

The chief work in the Herbarium has been the mounting and arranging of the large de Tabley Herbarium given by Lady Leighton. There is still much to be done in the general herbarium before all the specimens in it can be considered in a fit condition for consultation. The "tilting" of the table-cases in the Index-room and in the other rooms now in progress will economise space and facilitate the movements of visitors examining objects.

Further progress has been made with the Economic Botanical Collections. As botanical adviser to the Department, my time has been largely occupied with inquiries on the flax, osier, tobacco, and other industries. In the summer I was called to give evidence before the Seed Committee, and to visit the North of France to obtain the services of a tobacco expert, the Department's tobacco-growing experiments having been placed under my charge.

A seed-testing station has been established, of which I have been placed in charge, and has already examined nearly 300 samples of seeds, with interesting results.

The necessary assistance to which both the Board of Visitors and the Department have called attention has not yet been provided.

(Signed), T. JOHNSON.

DONATIONS TO THE BOTANICAL COLLECTIONS, 1900–1901.

A collection of Dried Plants from Royal Botanic Gardens, Calcutta.

Agricultural Gazette of New South Wales, 1900, and sixty-nine Economic Pamphlets, by J. H. Maiden and others.
Presented by J. H. Maiden, Director, Sydney Botanic Gardens.

Agricultural Bulletin and "Note on the Sugar Cane Disease."
Presented by Director, Botanic Department, North-west Provinces and Oudh.

Agricultural Ledger. (Dr. G. Watt's Dictionary of Economic Products India.)

A collection of fifty-one named Cryptogams, chiefly Lichens and Fungi.
Presented by A. Vaugban Jennings, F.L.S.

A collection of Hazel Nuts, found beneath fifteen feet of Bog at Ballynealty, near Crossmolina.
Presented by S. T. Williams, Ballina.

Bradford and Sons.
Eleven samples of Osier Rods.

Bennie, H. M. (executor of the late J. Bennie, F.G.S.)
A mounted slide of *Betula nana*, and a slide containing five specimens of *Salix herbacea*.

Cussons, G.
Thirty-two specimens of different kinds of Woods.

Dreaper, Miss.
Five sorts of Osier Rods.

Dickson, Messrs., Chester.
Eight sorts of Osier Rods.

Hunter, J., Chester.
Samples of Seed Impurities, &c.

Icones Floræ Japonicæ, compiled by the College of Science, Imperial University, Tokyo. Volume I.

Jarrold and Sons, London, E.C.
"The Revival of English Agriculture," "Practical Hints on Grasses and Grass-growing in East Anglia," &c.

Keen and Co., London.
    Samples of Mustard Manufacture, &c.
Kinahan, J. G., F.G.S.
    Walking Stick manufactured from a New Jersey cabbage stalk.
Macmillan and Co.
    Miall's "Round the Year."
    Mrs. Wilson's "Nature Studies in Elementary Schools."
    Barley's "First Lessons with Plants."
    Marche's "First Lessons in Elementary Science."
Meadows, M'J.
    Sample of Peat (Schonning's patent).
Sawer, J. Ch.
    "Rhodologia: A Discourse on Roses."
Sir W. T. Thiselton-Dyer, K.C.M.G., F.R.S., Director of Royal Botanic Gardens, Kew.
    Collection of Mosses, Fungi, and Lichens, from Austro-Hungary; also Duplicates of Economic specimens.
Squire, Stead, and Co.
    A number of samples of Paper-making material.
Sutton and Sons, Messrs.
    "Permanent and Temporary Pastures."
Tobacco (seventeen varieties).
    Given by F. Hayashi, Commissioner-General for Japan.
Tentamen Floræ Lutchensis, compiled by the College of Science, Imperial University, Tokyo. Section I.
United States National Herbarium, No. 5.
    "Forest Trees of the United States."
    "Osier Culture."
    "Forest Nursery."
    "Monograph of the North American *Umbelliferæ*."
West Indian Bulletin.
    Presented by Department of Agriculture, West Indies.
Walpole Bros.
    Chamærops Fortunei and *Cordyline Australis*, in flower.
Vilmorin-Andrieux et Cie., Messrs.
    212 Samples of Seeds.

APPENDIX VII. TO DIRECTOR'S REPORT.

REPORT OF THE HEAD MASTER, DUBLIN METROPOLITAN SCHOOL OF ART.

I have the honour to submit the Report of the Metropolitan School of Art for the year ending July 31st, 1900.

The total number of students has been 483. Of these, 180 attended the day classes, and 303 the evening classes.

The total amount of fees was £407 7*s*. 6*d*. The day fees amounted to £288 2*s*. 6*d*., and the evening to £119 5*s*.

The total number of works sent to South Kensington for examination was 680.

The elementary stages of Freehand Drawing, Model Drawing, and Shading from the Cast were abolished during the year, so that examinations were held in the elementary stages only of Perspective, Principles of Ornament, and Modelling. These elementary stages have been since abolished, so that for the future all examinations will be advanced art examinations.

The results gained in the elementary stages of the following subjects were as follows:—

Perspective,	13
Principles of Ornament,	10
Modelling,	8

Of these nineteen obtained the mark "First Class."

In the advanced art examinations the following were the results :—

Anatomy,	4
Antique from memory,	2
Drawing from Life,	12
Historic Ornament,	3
Advanced Perspective,	3
Geometrical Drawing (Art),	18
Architecture,	1
Drawing from the Antique,	9
Painting Still Life,	5
Freehand,	30
Shading from the Cast,	24
Model Drawing, ...	37
Principles of Ornament,	4
Painting Ornament,	5
Design (Elementary),	4
Design (Advanced),	1
Modelled Design, ...	3
Modelling from Life,	1

Of these two obtained the mark "Excellent" in Drawing from the Life, and thirty-seven gained "First Class."

The total number of works accepted for certificates was thirty-one. Of these seven were for the Art Master's Certificates, Groups I. and II.

The results of the Science classes in Descriptive Geometry and Building Construction are as follows :—Descriptive Geometry, 15; Building Construction, 2. It is a matter for regret that no students have been presented for examination in Machine Drawing or Building Construction from the evening class, although the attendance has been quite as good as in former years.

In the National Art Competition the School gained one Silver Medal, seven Bronze Medals, and fifteen National Book Prizes.

The Silver Medal was gained by William Whelan for a set of eleven sheets of drawings from chairs in the Museum and elsewhere, illustrating their development as regards form and ornamentation. The Bronze Medals were gained by Louisa Deane, design for Lace Opera Mantle; Beatrice M. Elvery, modelled design for Tobacco Jar; Louisa Evans, model of an Animal from the Cast; Anna L. Jones, design for a Portière; John M'Dermott, Ornament modelled from the Cast; Thomas Mathers, model of a Figure from the Antique; and Emily Scott, Flowers painted from Nature.

The number of students who were awarded prizes under the Local Prize Scheme are as follows :—

Freehand, ...	27
Model Drawing,	29
Perspective, ...	8
Elementary Principles of Ornament,	6
Elementary Modelling,	5
Descriptive Geometry, ...	7
"Excellent" in Drawing from Life,	2
"Accepted" for Art Master's Certificate,	7
For Sets of Works,	28

Free Studentships were awarded to fifteen students, either on account of having gained the Art Class Teacher's Certificate, or for success in the National Competition, &c.

Miss Beatrice M. Elvery was awarded a Queen's Prize for having taken tenth place in the kingdom, in the examination in Drawing from the Life.

The following students were awarded the Royal Dublin Society's Scholarships of £10 each: Evelyn Egan, Edith Emerson, Mary Hunter, Lonisa Deane, and Joseph Hanrahan.

His Excellency the Lord Lieutenant most kindly made arrangements by which over 100 students of the day and evening classes were enabled to visit the Arts and Crafts Exhibition. Opportunity was taken on both occasions of their visits to point out to the students the principal features of the exhibits.

A selection from the works of students belonging to the School was sent to the Paris Exhibition by the Department of Science and Art. The International Jury awarded a Silver Medal to this School; a mark of appreciation which is very gratifying.

In March last Sir Thomas Wardle, Chairman of the Silk Association of Great Britain, visited this School, and urged us to send some designs to the Woman's Exhibition, Earl's Court, London. Accordingly, we sent fourteen frames of designs: seven for silk textiles and seven for lace. Six prizes were offered by the Ladies' Committee for silk dress, silk hanging, and for lace design; and all the Schools of Art in the kingdom were invited to compete. We gained three out of the six prizes offered, that is, the first prize for silk dress, which was won by Emily Scott; and both first and second for lace, which were won by Alice Jacob and Emily Scott.

In the competition for the Taylor Scholarship and Prizes, the Scholarship of £50 was again awarded to William Orpen; sums of £25 and £10 to Henry Chancellor; £10 for a modelled figure of Bacchus to Beatrice M. Elvery; and £5 for the same subject to Albert Power.

The students gained ten prizes for designs for lace, wood-carving, and metal-work, at the competition in connection with the Art Industries Section of the Royal Dublin Society, held at the time of the Horse Show, Ball's Bridge.

In the competition for the Silver Cup presented by Her Majesty the Queen to the Royal Dublin Society, Miss Edith Emerson was employed by Messrs. Johnston & Co., Grafton-street, to make the design submitted by that firm. Although Messrs. Johnston & Co. were unsuccessful in gaining the order, yet the Committee of the Royal Dublin Society awarded a sum of three guineas to Miss Emerson, in consideration of the excellence of her design.

The class for design has been fully occupied during the year; indeed, at no period since its inception has there been such a demand for designs as during the past session. There has been some difficulty in meeting all the demands made upon the energies of the class. Drawings and designs, chiefly for lace, were made for Messrs. Walpole, Bros., for the Congested Districts Board; for the Convent of the Good Shepherd, Limerick; for the Beechmount Home Industries, Ballymote; and amongst others for the Hibernian Lace Company. For this firm quite a large number of designs were made. I need hardly say that this practice in designing has been highly beneficial to the students.

The Drawings of Ceilings in old Dublin houses, made by Mr. Whelan, and for which he obtained a National Prize last year, have been purchased by the Victoria and Albert Museum, South Kensington. I trust that Mr. Whelan may continue to make records of these most valuable examples of old Dublin art.

Misses E. Draper and Hurse were employed by the British Insulated Wire Co., for some months in making plans, maps, &c., connected with electric lighting.

An experiment was tried in the month of July by giving a summer course of instruction in Freehand Drawing, Geometrical Drawing, and Elementary Design, to lace and embroidery workers, and National School teachers. The course extended over three weeks, and the result surpassed our expectations. There were thirty-eight applicants; but only twenty-six of these complied with the requirements, and were admitted to the course. It commenced on the 9th July. The classes were taught by Miss Jacob and Mr. Luke, and the students attended both by day and evening. Nothing could exceed the diligence and attention exhibited by the students. At the conclusion certificates were given to those who had attended. The success of the experiment encourages me to express the hope that we may be permitted to hold another and more extended course next summer.

Miss Emerson and Miss Cameron were selected to attend the summer course of instruction given at the Royal College of Art, and Miss Jacob and Mr. Whelan were permitted to visit the Victoria and Albert Museum, South Kensington, and make studies therein.

Greatly to our regret Miss Emily Scott resigned the pupil-teachership in July. I must bear testimony to the great success which attended Miss Scott's work in the School; she had a natural aptitude for teaching, which was productive of good results. Miss Emerson has been appointed in her place.

The course of twenty lectures on Anatomy was given by Dr. Fraser, and was attended by thirty-one students. The twelve lectures on Architecture were given by Mr. Cecil Orr, and were attended by thirty-two students.

The annual exhibition of students' works took place at Christmas, and was visited by 6,298 persons, of whom 5,090 were day, and 1,208 evening, visitors.

The Landscape class was divided into two sections; one met at Mr. Blackburne's, Rathfarnham. Our thanks are due to Mr. Blackburne for permission to study in his extensive grounds. The other met at the Royal Botanic Gardens, Glasnevin. The total numbers attending the class was 41.

The School of Art Sketching Club did very good work throughout the year. As usual, we exhibited a selection from the works at Christmas.

The results of the branch class at the Presentation Convent, Thurles, were as follows :—

Descriptive Geometry, ...	3	passed.
Freehand Drawing, ...	5	,,
Model Drawing, ...	2	,,
Geometrical Drawing (Art), ...	4	,,
Perspective, ...	2	,,
Shading from the Cast, ...	4	,,

Six works were accepted for the Art Class Teacher's Certificate.

To my assistants, who have so earnestly devoted themselves to the interests of the School, my best thanks are due.

(Signed), JAMES BRENAN.

APPENDIX VIII. TO DIRECTOR'S REPORT.

REPORT OF THE KEEPER, ROYAL BOTANIC GARDENS, GLASNEVIN.

Herewith I beg to submit to you my Report on the condition of the Royal Botanic Gardens during the period ending 31st March, 1901.

Number of Visitors.

There has been a large increase in the number of visitors to the Gardens over the previous fifteen months. There has been an increase in the attendance in twelve months, and a decrease in three months. There was a decrease of 4,058 in February, of 7,332 in March, 1900, and of 2,490 in August, giving a total decrease of 14,330 for those three months.

The increase is most marked in May, June, July and September, 1900, and March, 1901; amounting to 7,605 in May, 14,071 in June, 9,832 in July, and 30,150 in September. The increase for the month of March, 1901, over March, 1899, was 3,499, and over March, 1900, 10,826. The total attendance for twelve months ending 31st December, 1900, was 407,770, of which number 264,867 were Sunday visitors, and 142,903 were weekday visitors; being an increase over 1899 of 20,052 Sunday visitors, and 43,104 weekday visitors, or a total increase of 63,156.

The total attendance for fifteen months ending 31st March, 1901, was 457,765, of which number 299,660 were Sunday visitors, and 158,105 were weekday visitors. This represents an increase over fifteen months ending 31st March, 1900, of 75,643.

This result is remarkable, as 1900 has been an exceptionally wet year; the rainfall not only being much greater than in 1899, but the number of days on which it fell being also greater.

	12 months to 31st December, 1900.	15 months to 31st March 1901.
Total number of visitors, ...	407,770 ...	457,765
Sunday visitors, ...	264,867 ...	299,660
Weekday visitors, ...	142,903 ...	158,105
Highest monthly attendance, September, ...	59,625	
Highest weekly attendance, week ending 9th June (Whit-week), ...	20,470	
Highest Sunday attendance, Sunday, 20th May, ...	8,783	
Highest weekday attendance, Monday, 4th June (Whit-Monday), ...	9,030	
Lowest Sunday attendance, Sunday, 30th December, ...	308	
Lowest weekday attendance, Monday, 26th February, ...	23	

Conservatories.

In last year's Estimates provision was made for some alterations and repairs to the Conservatories, all of which have been completed.

Additional ventilators have been put in the cool Fern House. On each side of the passage leading from the Fern House to the Aquatic House small unheated compartments have been constructed, in which a collection of Filmy Ferns is to be placed. This collection at present is in a small house which is not open to the public. Several of the Tree-ferns were supplied with new tubs. All broken glass in the roof of the large Palm House has been replaced.

The roof of the Orchid House is decaying in places, and some of the rafters and sash bars must be renewed. The remainder of the Conservatories are in good order.

Propagating Pits—Stable Range.

The roof of the stove pit has been thoroughly repaired and painted.

Lower Pit.

Some alteration has been made in the heating arrangements of this pit. The boiler and furnace have been removed to the house in plant yard, so that this house, and the lower pit, are now heated by one boiler, instead of by two boilers. So far this arrangement has worked all right.

Upper Pit.

A new iron tank with appliances for heating the water has been constructed, and some bottom ventilators have been provided.

Outdoor Department.

The pressure of work in the Outdoor Department still continues, and several important changes have been carried out.

The trellis work in Clematis class was completed in March, and the collection of Clematis extended.

The Rose Garden has been completely remade, and remodelled. Formerly the various classes of Rose were more or less scattered through each other. They have now been classed, and planted in separate groups, Moss Roses, Tea Roses, Hybrid Perpetuals, Climbing Roses, China Roses, and species of Rose, having all separate beds. The beds were remade where necessary, the old soil being removed, and replaced with fresh material. The Collection of hardy *Nymphæas* in the pond has been largely added to, most of the best new varieties having been purchased. The ordinary white Water Lily, and other plants, have been cleared from a large portion of the upper pond, which has been planted with such of the newer sorts as were sufficiently strong to plant out. These were much admired by visitors, and as they flowered profusely, they formed one of the most attractive features in the Garden during the past season.

The Azalea beds near the pond were all remade, and replanted. Owing to the amount of lime in the soil, and in the water, the Azalea and Rhododendron beds require remaking, and new material, every five or six years.

The collection of species and varieties of Lilium has been moved to other quarters. Lily disease made its appearance some few years ago, and did much damage to many species which formerly grew well, and I hope by changing their position, and by giving them fresh materials in which to grow, that this may be got rid of. A collection of new bulbs has been purchased to replace those which failed. Some damage was done to the river bank by floods, which followed the heavy rains in the latter end of November.

The lower field, which is below the level of the river, is constantly liable to injury by floods; therefore little use has been made of it. As it is in a picturesque part of the Garden I hope to be able to open it for the use of the public. I have commenced raising the level of the field to that of the river bank, but it will be a considerable time before I can get this work completed. A large amount of gravel has been raised from the Pinetum, and from other places, where the trees were failing owing to the gravel coming too close to the surface.

New Field.

I have commenced work in the field which was last year added to the Garden. A partition railing has been erected dividing the field into two. One part has been broken up, and partly manured and cropped, to clean it. The ground was in bad condition : full of weeds and wire-worm. As soon as it is in good order the tree nursery, some of the economic classes, the vegetable classes, and other minor departments, will be transferred to it. I have made a roadway from the back entrance. Until the whole field has been properly fenced nothing definite can be done with it, as dirt and rubbish of every description is thrown through the wire fence, and trespassers cannot be excluded.

Arboretum.

The following duplicate trees have been taken down :—One Lime, one Birch, one *Pinus sylvestris*, one *Pinus laricio*. These were in unsuitable positions, and were injuring the young trees around them. One of the large twin Ash trees at the corner of the wild garden was blown down by the storm on the night of the 9th December. Fortunately, it did no damage in falling. Trenches were opened round some of the Conifers which were in bad condition; the gravel and bad soil were taken from under them, as far as possible, and fresh soil was given to them. The growth which they have since made has been strong and healthy. Any young trees fit for transplanting have been transferred from the nursery ground to their permanent quarters. in the garden.

Purchase of Plants and Seeds.

I have given as much care and attention as possible to acquiring rare and interesting plants by purchase, and have added 1,690 plants to the collections by this means. They have been purchased from all available sources, home and foreign. Amongst them are several plants which I have been endeavouring for a long time to obtain. The sum expended on purchase of plants and seeds was £304 10*s*.

Number of plants purchased, 1,690.

	£	*s.*	*d.*
Orchids, Ferns, Palms, and indoor plants,	150	15	6
Hardy plants. trees, and shrubs, ...	95	16	6
Seeds, bulbs for pots, beds, and planting in grass, ...	57	18	0
	£304	10	0

Amongst the rarer plants purchased are the following :—*Aerides Veitchii, Ceanothus Fendleri, Celmisia Munroi, Cirrhopetalum Kordersii, Cirrhopetalum Rothschildianum, Cochenia Rosiana, Costus albescens, Cratægo-Mespilus Dardari, Cymbidium Gammieanum, Cycnoches maculata, Cytisus Heuffeli, Echinocactus onratus, Echinocactus pilosus, Epidendrum purpurachilum, Eucryphia cordifolia, Fourquieria columnaris, Gaultheria furiens, Gaultheria antipoda, Genista Martini, Hamamelis mollis, Iris Heldreichii. Iris Tauri, Iris Tubergeniana, Libocedrus macrolepis, Magnolia longifolia, Magnolia salicifolia, Masdevallia venosa, Nymphæ William Falconer, Phaius flavus, Rhododendron kamtschaticum, Thladiantha dubia.*

Exchange of Plants and Seeds.

Numerous additions have been made to the collections, and many rare plants have been obtained by means of exchange and by gift. I have received generous assistance from private growers, from nurserymen, and from the Directors of Botanical Gardens. I have to acknowledge with grateful thanks the invaluable contributions which have been received from the Director of the Royal Gardens, Kew. Amongst the plants from Kew were many which could not have been obtained from other sources. H. J. Elwes, Esq., of Colesborne. presented a nice lot of rare plants, which I selected in his garden last September. One of the most valuable sets of plants ever received at Glasnevin was presented by Messrs. James Veitch and Sons, of Chelsea, consisting mainly of a selection of hybrid Orchids raised in the nurseries of that firm, and including many valuable varieties. Specially interesting and valuable donations were received from—Mr. C. Curtis, Penang: Herr Max Leitchtlin, Baden Baden: Miss E. Willmott, Warley-place; W. E. Gumbleton, Esq., J.P., Belgrove; Major Prain, M.D., Calcutta; R. I. Lynch, Esq., Cambridge; Lord Ilchester: Mr. T. Smith, Newry; James O'Brien, Esq.: Thomas Acton, Esq., D.L., Wicklow; Messrs. H. Low and Co., Bush Hill Park: Messrs. F. Sander and Co., St. Albans; Earl of Ducie, Tortworth; Sir Trevor Lawrence, Bart., Dorking.

The number of donations to Garden was 152, coming from 92 donors, living in the following countries :—England, 35; Ireland, 23: Germany, 6; Italy, 4; France, 3: India, 3; Austria, 2; Switzerland, 2; Holland, 2; Russia, 1; Spain, 1: Roumania, 1; Servia, 1: Norway, 1: Portugal, 1; Australia, 1; Penang, 1; Brazil, 1; Africa, 1; America, 1; Scotland, 1.

Donations to Garden :—Plants, 722: Seeds, 1,825 packets.
Donations from Gardens :—Plants, 818; Seeds, 3,556 packets.
Amongst the rare plants received by exchange are the following :—

Aesculus indica, Aglaonema Curtisii. Anacyclus formosus, Aplopappus ericoides, Arisæma Bakeriana, Arundina chinensis, Asplenium fijiense. Aster Picoli, Aster Porteri, Castanopsis chrysophylla, Cycnoches Loddigesii, Cydonia sinensis. Cypripedium insigne Sanderæ, Cyrtopera plantaginea, Dendrobium bellatulum, Dendrobium Coelogyne, Drynaria diversifolia, Hazardia detonsa, Hidalgoa Werkleyi, Helichrysum Guilielmi, Iris urmiensis, Juglans rupestris, Lecanopteris carnosa, Masdevallia burfordiense. Nephrodium Slonei. Peristeria aspersa, Phaius Blumei, Rhododendron fulgens. Scolopendrium nigripes, Senecio tabularia, Sparaxis pulcherrima alba, Spiræa Aitchesoni, Statice sinense, Trevoria chloris, Tulipa Borsczowi, Tulipa Korolkowi.

Journeys.

In September I went to London, and visited Kew Gardens, and most of the leading plant nurseries. I also visited Mr. H. J. Elwes' rich collection of plants at Cirencester, and Sir Trevor Lawrence's collection of Orchids at Dorking. From both of these gardens I got useful and valuable additions to the Glasnevin collection.

GENERAL.

Water Supply.

Although the period reported on has been abnormally wet, the water pressure was very poor, and quite insufficient for the requirements of the garden. There is not sufficient pressure to reach the gallery of the

Palm House during the daytime, and at no time can water be taken from the mains for the houses, and for the outdoor departments, simultaneously. I again urge the necessity of arranging for a separate supply of water for the outdoor department, either from the canal, or by pumping from the river.

House for Tropical Ferns.

A house for Tropical Ferns is much required. The growing collection of Orchids requires all the space in the Orchid House, one compartment of which is now given up to Ferns.

Refreshment Rooms.

The neighbourhood of Glasnevin is very badly supplied with Tea-rooms, or other similar places, where tea or lunch can be obtained. There is no such place nearer than Phibsborough, one mile from the Garden. The cottage adjoining the garden could easily be converted into tea-rooms, and the situation is very suitable.

Night Fireman.

Treasury sanction has been obtained to employ an additional fireman, and since 1st November two firemen have been on the staff. One of these is employed on night duty, the other on day duty, changing each week. This is a great improvement on the old system, and makes it much easier to keep the night temperature in the houses properly regulated.

Entrance Gates.

The new entrance gates have been completed, and entrance and exit turnstiles have been provided. From 1st January, 1900, the entrance turnstiles have been in use, so that the attendance has been automatically recorded, and so freed from any element of doubt.

Laboratory.

The Laboratory has been largely used. The gardening class was held there from February to May, and the Professor of Botany of the Royal College of Science used it regularly during the summer months for the ordinary Botany class of the College. He also held a special class for Veterinary students in it during the latter months of 1900.

(Signed), F. W. MOORE.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

REPORT OF THE BOARD OF VISITORS

OF THE

SCIENCE AND ART MUSEUM, THE NATURAL HISTORY COLLECTION, AND THE ROYAL BOTANIC GARDENS, GLASNEVIN.

TO THE SECRETARY, DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

SIR,

The Board of Visitors having inspected the several sections of the Dublin Museum and the Royal Botanic Gardens, have the honour to submit the following as their Report for the fifteen months ending 31st March, 1901:—

MUSEUM.

The popularity of the Museum is indicated by the large number of visitors, the number of those passing the turnstiles for the fifteen months ending the 31st March last amounting to 519,248.

The extension of the hour for closing on two nights in the week from 9 o'clock to 10 o'clock, p.m., seems to have been duly appreciated by the public.

Guides.—The increasing sale of the Short Guides to the contents of the Museum evinces the interest taken in the collections, it would be desirable to have the large Guides completed as soon as possible, and extra assistance should be given for their compilation. The Index to the Short Guide will be a great improvement.

ART AND INDUSTRIAL COLLECTIONS.

Egyptian Room.—The classification is now almost completed by Miss Murray, a pupil of Dr. Flinders Petrie, by whom all the objects have been carefully labelled and re-arranged; modes of burial, amulets and small objects, prehistoric pottery and casts of sculpture being placed in order, thus enabling those who have not the opportunity of visiting other collections to obtain a clear idea of ancient Egyptian civilisation.

Oriental Art.—Amongst the objects on loan should especially be noticed the almost unique collection of Brass and Copper work from Llassa, lent by Major Chevenix Trench. Should any portion of this collection be disposed of it would be most desirable to secure some specimens for permanent exhibition in the Museum.

Architecture.—A copy of Donatello's Cantoria (now in the Cathedral Museum at Florence), which was exhibited at Paris in the Italian Section of the Exhibition, has been secured, and cannot fail to attract considerable interest.

Glass, Pottery, and Porcelain.—The additions to this section during the past year include a specially valuable collection of Persian Tiles, and a very beautiful glass lamp, from a Mosque at Cairo, which formed portion of the Myers Collection.

Some most interesting bits of modern work were purchased at the Paris Exhibition illustrative of the state of artistic work in Glass, Pottery, and Porcelain, on the continent of Europe, at the close of the nineteenth century.

Silver.—A few specimens of silver work have been added to the collection during the year; but to be of real value this collection requires considerable extension, and fine specimens should be secured when possible, even if very high prices have to be given.

Lace Room.—The Lace Collection demands further attention, with the object of increasing the specimens of really fine work, in order that workers may see what has been done in the past, and by emulating previous work, strive to attain for Irish lace the highest character. The daylight in this room is quite inadequate, and should be much stronger.

Russian Peasant Industries.—This collection is very interesting, showing, as it does, the naturally artistic temperament to be much superior to that developed under amateur instruction, and also the results of special workshop training, where schools have been established by the land-owners.

Irish Architecture.—The cast of the Cross at Monasterboice is now complete, the panels at the base, which were moulded when uncovered last year, having been added. Attention was called in the last Report to the importance of securing casts of Irish Architecture and other Antiquities of historical interest in this country, and it is satisfactory to know that something is being done in this direction.

Ethnological Room.—The importance of classification and arrangement in this department is most obvious. Something is being done, but increased assistance is urgently required, and should not be delayed.

Attention was called to this last year, and the staff should be increased in this department, as well as in other departments of the Museum, to enable the work to be carried on more rapidly.

Annexe.—It is much to be hoped that the rebuilding of this will be taken in hand, as extra room is required in many of the departments, and for some years past the attention of the authorities has been called to the state of this building by the Visitors.

COLLECTION OF IRISH ANTIQUITIES.

This branch of the Museum was dealt with so fully in last year's Report that it does not need much comment in the present one. It is assuming a satisfactory state, and shows evidence of much care having been spent on its arrangement during the period under review. Here, as elsewhere in the Museum, it is evident that the problem of how best to provide additional space will soon have to be seriously considered. Nothing has been done as yet towards appropriating a portion of Room I. as an office, so as to make the rest of it available for exhibitional purposes, and the public have no access to it; but Room IV. (the North-western Pavilion) has for a considerable time been fully open to them, and now forms one of the most attractive portions of the Museum.

The intervening "Long" Room (No. III.), which is the second of those appropriated to the Royal Irish Academy's Collection, is now in fair order. Its contents are well exhibited; but much has still to be done in arranging and labelling them.

Some interesting items have been added, but the acquisitions under the "Treasure Trove" Regulations (under which the Royal Irish Academy acts for the Crown in the public interest) have not been as numerous and varied as in former years.

A small, but important collection from the Museum of the Royal Society of Antiquaries of Ireland at Kilkenny has recently been deposited by that body in the collections of the Royal Irish Academy in this Museum.

In the chief Room, No. IV., which is to be devoted to Christian Antiquities, the new cases lately provided appear to be satisfactory, and worthy of the precious objects of early Irish Art which they contain. The lighting of this room in the evening, however, requires improvement.

The Annual Meeting of the Royal Archæological Institute of Great Britain and Ireland, which was held in Dublin in July last, was an event of special interest in connexion with the Museum. It was the first occasion on which this Society—though bearing "Ireland" in its title—came to visit this country. The Institute received a worthy welcome from the municipal authorities, and from kindred antiquarian bodies here, and the meeting afforded an attractive opportunity for many leading English archæologists, including several members of the Council of the Society of Antiquaries of London, to acquaint themselves with some of the more important antiquities of Ireland. With the sanction of the Department, the Museum was, for the night of July 19th, placed at the service of the Royal Irish Academy and the Royal Society of Antiquaries of Ireland, on whose invitation the members of the Institute were entertained at a very successful conversazione, being received by the Earl of Rosse, K.P., President of the Royal Irish

Academy, and of the meeting. The *Archæological Journal* (December, 1900, Vol. 57, p. 326) gives a full account of the event, and prints the more important papers read at the several meetings held in Dublin. The Council of the Institute record that "A most enjoyable evening was spent, and every facility afforded for the inspection of the famous collection of Irish Antiquities." They add that "Mr. G. Coffey, Curator, gave invaluable assistance in exhibiting and describing the objects placed under his care, and they express their thanks to him and to other Irish Antiquaries who helped to make the meeting such a great success. Many of the members expressed the gratification afforded to them by an inspection of the Museum collections, and their satisfaction at the handsome manner in which these collections have been housed. Amongst the papers published in the *Archæological Journal*, one by the late Miss Margaret Stokes, Hon. M.R.I.A., affords valuable information on the Signs of the Zodiac shown on the lowest series of panels of the Monasterboice Cross.

The Visitors feel bound to record their regret that His Majesty's Government have not as yet succeeded in obtaining for this Museum the important find of Gold Objects, from the North of Ireland, purchased by the British Museum, and they hope that the objects in question may ere long be restored to Ireland, to have a permanent and appropriate resting place in our National Museum.

MINERALOGICAL SECTION.

The most valuable additions to the Mineralogical Collection during the past year consist in the fine specimens of copper and iron ores, and coal, added to the Irish Collection. These had previously been exhibited at the Royal College of Science, but are now more easily accessible to the general public.

The Irish Collection is now completely labelled, including the new specimens mentioned above.

The large geological map has been repainted, and details brought up to date.

Although the suggestion made in last year's Report for the employment of a permanent assistant to the Professor has not been acted upon, the work has been facilitated by the temporary employment of Mr. St. John Lyburn, whose services were, fortunately, available

Attention is again called to the increasing difficulty of accommodating the collection, which is yearly growing, and the injury which results to the collection from the free admission of soot and dust through the roof of the temporary building, which is a part of the Annexe.

ZOOLOGICAL COLLECTIONS.

A great deal of work has been done during the past fifteen months in the arrangement of the collections; but in many instances this work has been stopped owing to the delay in the alteration of the cases. Thus, in the Upper Gallery, which is devoted to the display of the Invertebrates, the re-arrangement of the upright cases is still in an unfinished state, and no specimens can be placed in these cases until the entire series is ready.

On the Lower Gallery, progress in arranging the collection of Birds has come to a standstill owing to the delay in adapting the old cases. This work was commenced several years ago, but is still only in progress. It is most desirable that it should be completed as soon as possible.

At least two additional large cases are required for the Mammals.

Progress has been made in the arrangement of the Ussher Collection of the Eggs of Irish Birds, which forms one of the most important additions to the Zoological Museum during the past year. Excellent work has been also done in the various sub-sections, such as among the Insects, Shells, Reptiles, Fish, &c.

A good deal of attention has been attracted by a collection, which has recently been added, of the Birds alluded to in Shakespeare's Plays as used in hawking.

The stone stairs leading to the first floor of the Museum are so much worn away as to be, in places, even dangerous. The Visitors would call the serious attention of the Department to this state of things, which certainly calls for immediate care.

The Annexe which contains the important collection of Fossil Animals is in a very bad state. The greater part of the roof leaks in wet weather, the building itself is little more than a shed, formerly used for the exhibition of cattle. It covers a considerable area of ground, upon which a permanent building of stone or brick could be erected. While the Visitors do not see their way, for the present, to do more than point out the necessity for such a building, they feel bound to call the attention of the Department to the extreme insecurity of the present shed. The store shed which adjoins the Annexe is also in a wretched and insecure condition.

THE BOTANICAL AND ECONOMIC COLLECTIONS.

The importance of these collections has been greatly increased during the period covered by this Report, in consequence of the intimate relations into which the Museum has been brought with the newly-established Department of Agriculture and Technical Instruction; and it seems probable that in the immediate future this importance may be more fully developed.

The testing of seeds for the Department has been added to the duties of the Keeper of these collections, and, therefore, it is important that further provision should be made for the efficient carrying on of the ordinary work of the botanical division.

In the Herbarium the chief work which has engaged the attention of the staff has been the mounting of the important De Tabley Collection of Dried Plants, the presentation of which was mentioned in the last Report.

In this department additional book-cases are much needed. At present many volumes are stored behind a piece of canvas.

where they are not properly protected from dust, and are, therefore, daily being injured, and where they are, moreover, less useful for immediate reference than they ought to be. As regards the Economic specimens the utility of the collections to the non-scientific visitors has been increased by the addition of the popular names. There have not been many specimens added during the period to which this Report refers. The two main causes of this have been want of space, and want of additional assistance.

So far as the want of space is concerned, the narrowing of the cases, which is now in course of being carried out, will, to a considerable extent, meet this difficulty, and as to the want of assistance, that point has been already referred to. It is right to point out that some of the wall-cases have not yet been provided with drawers. Suitable slide cabinets are required for a valuable collection of coloured diagrams, which are at present merely stored, and that, too, in such a way as not to be readily available for students.

The general work of the Botanical and Economic Sections has been carried on during the period now under review in a perfectly satisfactory manner so far as the resources at the disposal of the Keeper permitted.

ROYAL BOTANIC GARDENS, GLASNEVIN.

The Royal Botanic Gardens were visited, during the fifteen months ending the 31st March last, by 420,259 persons, of whom 277,023 were Sunday visitors. These large numbers sufficiently indicate the interest taken in the Gardens by the public. The conduct of the visitors has been exemplary, and no material damage has been done to the shrubs or flowers. The necessity for a Refreshment Room has been very strongly shown, the nearest attainable Refreshment Room being a mile distant from the Gardens. If a Tea House were built on the site of the cottage (lately acquired) by the side of the entrance gate, there is little doubt it would be highly appreciated. Refreshments should be limited to tea and coffee. There should be no entrance within the Gardens to the Tea Rooms. The site proposed is opposite to the tramway.

The houses and grounds appear, and are reported by the Director, to be in excellent order. The lately-erected Succulent House has proved itself to be well adapted for this group of plants. The Ferns from the Tropics are as yet unprovided for; the specimens at present are dispersed among the Orchids. If a house were built to suit these beautiful plants the range of glass houses in the Gardens would be complete.

A further portion of the hilly ground, alongside the existing Rock Garden, has been taken into cultivation, and in a very short time the collection of Alpine Plants will prove an interesting feature of the Gardens.

Two important additions have been made in the Herbaceous Collection, the establishment of an extensive Rose Garden, which contains a series of the species of this favourite flower, with a selection of some of the more striking varieties. This Rose Garden is surrounded by a tall wire fence covered with a collection of species of Clematis. The other notable addition is the planting of the pond with a collection of the species and varieties of the hardy Water-lilies, the growth and flowering of which have already proved how well they have adapted themselves to our climate.

The Visitors would call the earnest attention of the Department to the pressing need of a sufficient water supply to the Garden and its numerous houses. At present there is a supply, by arrangement, from the well-known Vartry source. While this water is perfect so far as quality is concerned, the supply leaves much to be desired: the pressure is not sufficient to enable the water to reach the upper portions of the Palm House, and in the hot weather, when watering is most needed, the supply is at its lowest. The cost of the Vartry water prevents its being used for the plants throughout the grounds. As the very existence of the Gardens depends on their having a good supply of water, the importance of an inquiry as to how a further supply can be obtained need scarcely be insisted on. It would appear possible that the River Tolka might be utilized for working a ram. By this means one or more tanks, to be erected at the rear of the Palm House at the highest possible level, could be supplied with water for distribution throughout the grounds. Or if the current of the Tolka proved not powerful enough to work such a ram, the neighbouring canal would afford a sufficient supply.

The large field recently acquired, the possession of which is of the greatest value to the Gardens, until surrounded by a wall of sufficient height to keep off trespassers, cannot be fully utilized. One-half of it has been screened off by a temporary wire fence, and some attempts have been made to get the ground into heart. When walled in, this plot will serve the most important part of acting as an experimental and growing garden, and so enable the portions of the Gardens at present devoted to such purposes to be made more attractive. A step in this latter direction has already been taken in the field along the Tolka, at one time used for experimental purposes. Its level has been in part raised, and the banks along the river have been planted with a series of hardy Bamboos, which promise well.

J. K. INGRAM,
President.

May, 1901.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

REPORT

OF

THE COUNCIL OF TRUSTEES

FOR THE

NATIONAL LIBRARY OF IRELAND

FOR THE YEAR 1900,

AND THE QUARTER ENDED 31st MARCH, 1901.

To the Secretary of the Department of Agriculture and Technical Instruction for Ireland.

Sir,

As Chairman of the Council of Trustees, I have the honour to submit the following Report of that body for the period of fifteen months ended 31st March, 1901.

In April, 1900, the Trustees were informed that the Administration of the Library had, in common with that of the other Science and Art Institutions in Dublin been transferred from the Science and Art Department to the new Department of Agriculture and Technical Instruction for Ireland.

During 1900 the Library was open to the public on 293 days. The attendances of readers numbered 148,405, a record lower than that of 1899, the preceding year, by 6,473, but exceeding that of all other years in the history of the Library.

			Daily average.
Gentlemen, Morning Attendance	(10 to 6)	101,630	347
" Evening "	(6 to 10)	37,089	126½
Ladies, Morning and Evenings	(10 to 10)	9,686	33
		148,405	506½

The decline in attendance may, in part, be due to the war. Other public institutions have been similarly affected.

During the quarter ending March 31st, 1901, the Library was open to the public on 76 days. The attendances numbered 40,763.

Gentlemen, Morning Attendance	(10 to 6)	27,850
" Evening "	(6 to 10)	10,318
Ladies, Morning and Evening,	(10 to 10)	2,595
		40,763

This gives a daily average attendance of 536.

During 1900, 3,185 volumes have been catalogued and made accessible to readers. Of these 728 were folio, 369 quarto, and 2,088 octavo and smaller sizes. A grouping by class of these volumes is given in the Appendix.

During the quarter January–March, 1901, 826 volumes have been catalogued and made accessible to readers.

Statistics of the Binding done for the Library, of the Borrowing by members of the Royal Dublin Society and by certain officers of the Science and Art Institutions, are furnished in the Appendix.

Among the more notable special donations of the past year are: The numerous publications of the British Museum, presented by the Trustees; the *Drogheda Independent*, 1889 to 1899, presented by Mr. Michael A. Casey, the Editor; the *Catalogue of the John Rylands Library; the Catalogue of Early English Books to* 1640 *in the John Rylands Library*, presented by the Governors; the *Reports and Proceedings* of the Australasian Association for the Advancement of Science, 1887–1898, presented by the Association; Daubenton's *Planches Enluminées*, a magnificent, complete set in ten volumes, of 108 coloured plates, chiefly figures of birds, illustrating Buffon, presented by Mr. Wellington Gray, of Killiney (now of Athlone); the MS. from which the four published volumes of William Thompson's *Natural History of Ireland* were completed (this manuscript is contained in five bound quartos, besides a quantity of MS. not arranged for binding), presented by the brother of the Author, the late James Thompson, J.P., of Belfast; fifty volumes of the *Dublin Gazette*, from 1834 to 1869, presented by the Irish Land Commission; the *British Case in the Venezuelan Arbitration*, presented by the Foreign Office; five volumes of the publications of the Oriental Translation Fund from the India Office; English newspapers from the Royal Irish Academy, comprising *Times*, 1838 to 1852 (41 volumes); *Standard*, 1839 to 1852 (27 volumes); *Morning Chronicle*, 1838 to 1852 31 volumes); *Globe*, 1836–1852 (34 volumes); and 119 volumes of the *London Gazette*, from 1802 to 1853; an Album, bound in half morocco, filled with photographs of cromlechs, castles, and churches in County Clare, from Mr. T. J. Westropp, presented to the Library in 1898, and enlarged and indexed by him in 1900; *La Guerre*, by Mons. Jean de Bloch, six volumes, presented by the author; the following papers, presented by the Fisheries Branch of the Department of Agriculture: *Field*, 1861–94; *Land and Water*, 1871–94; *Irish Traders' Gazette*, 1889–93; *Irish Sportsman*, 1872–92; *Catalogue of the early printed Books and MSS. in the Public Library of Bristol*, presented by Mr. Norris Mathews, the Librarian; the *fac-simile* of the *Book of Ballymote*, presented by the Royal Irish Academy; a complete set of Sir John Gilbert's Calendar of the Ancient Records of Dublin, presented by the Corporation of Dublin. Lists of the names of donors to the Library will be found in the Appendix.

The Trustees regret to state that no increase of the staff of the Library, and no addition to its space has been sanctioned during the year 1900. In the year 1898 the Trustees reported that "certain indispensable pieces of Library work other than cataloguing remained unattempted, while some are suspended or imperfectly executed, because of the insufficiency of the staff of Library officers." In the following paragraphs the Trustees endeavour to state more fully what portions of the Library work are unattempted, or suspended, or imperfectly executed.

(*a*) In the first place, the superintendence of the Reading Room demands more attention than can be given to it at present. The Librarian and the Assistant Librarians, from time to time visit the room, and are consulted by readers as to sources of information; but, to fulfil this function adequately is very difficult, because during the greater part of each working day only two Library officers are present in the Library, and they have many other matters to attend to. The Trustees point out that the Library working day extends uniformly from 10 A.M. to 10 P.M. during 293 days every year. Thus one of the Assistant Librarians takes up duty every day at 3 o'clock. The vacation of one of the Librarians or his illness leaves but two officers on duty.

(*b*) The Printing of the Catalogue is the next subject to which the Trustees desire to call attention. The Trustees feel grave concern about the delay in the printing of the titles written for the Joly Collection. The titles for an author catalogue of the books of this collection have all been written (except as regards the Music, and about 600 volumes of pamphlets). But it is not possible to send these titles, which refer to 23,000 volumes, to the press until they have been read and edited; and subsequently the revision of the proof-sheets will imply much arduous work.

(*c*) Again, the Trustees are anxious to print the full Author and Subject Catalogue for 1894–1900. Of this the copy exists up to date, but the Librarian has not hitherto been able to prepare it for press.

(*d*) Again, the Trustees desire to print in classified sections the revised Catalogue, now far advanced, of the older part of the Library, for which titles have been accumulating since April, 1899.

(*e*) The Trustees have more than once in previous reports drawn attention to the need of Shelf-lists in the Library. They consider that examination and revision of the Classification of the books on the shelves should be undertaken. Not only is this desirable for stock-taking, but there is the further great advantage that since the books of the Library are arranged in the order of subjects the shelf-lists thus prepared would be very valuable Class-lists of a great body of well-selected literature.

(*f*) The Trustees call attention to the number of isolated prints, maps, etc., in the Library, described in the Report of 1898, which require to be arranged, classified, and catalogued.

(*g*) Lastly, the arrears in cataloguing new acquisitions are increasing seriously. The special cataloguers at present at work are appointed to write titles for the older part of the Library. Great numbers of books and pamphlets have gathered, and continue to gather, which cannot be catalogued by the present limited staff.

In the early months of 1900 an extremely valuable improvement was made—the hydraulic lift, which had stopped at the ground floor, being extended to the basement. The basement being thus rendered more accessible, it is possible to store there large numbers of newspapers, bound and unbound. But the Trustees regard this use of the basement as only a makeshift. In their Report for 1899 they point out what are the requisites of a newspaper department in a great library, and show that these can be best attained by building the Eastern Wing of the Library according to the Architect's accepted design.

The Trustees would call attention to the statement concerning the Library Building in their Report for 1899, where they indicate in detail the imperfection of the public service of the Library, and the considerable danger to public property implied by the want of ample specialised accommodation for Newspapers, Ordnance Survey Maps, and the Patents Specifications. They are convinced that the efficient working of the Library demands enlarged space, with special provision for such publications.

The Trustees have to report with great regret the death on July 10, 1900, of Mr. John Doran, one of the Attendants in the Library. During the past year they have appointed two Boy-Attendants to fill vacancies on the Staff.

The Librarian was authorized to attend the Annual Meeting of the Library Association, held at Bristol, late in September, 1900. The business of the Library Association is directly concerned with a Librarian's profession, and without attending at least the annual meetings it is difficult to keep abreast of the constant improvements now being made in the management of public libraries.

In November, 1900, Mr. Guthrie Vine, M.A., London, who did valuable work as Temporary Cataloguer in this Library during the preceding three and-a-half years, was appointed Sub-Librarian in the John Rylands Library, Manchester. The post thus vacated was filled by the appointment, on December 14th, of Miss Rosalind Elmes, B.A.

The revision of the older portion of the Catalogue, which was commenced last year, has been progressing steadily. One noteworthy feature in connection with this branch of the Library has been the successful introduction of type-writing for the purpose of cataloguing, it being found possible to type the titles without difficulty direct from the books themselves.

The number of volumes for which titles were written between January 1st and December 31st, was 9,655—a satisfactory total—especially when it is considered that full and accurate subject and author titles were written, and that the nature of the books called for a very large number of subject references.

The number of volumes catalogued during the Quarter ending March 31st was 1,230.

EDWARD DOWDEN,

Chairman, Council of Trustees of the National Library of Ireland.

26th April, 1901.

APPENDIX I.

Statistics and Lists

Subjoined is a brief general statement of the attendances of readers since the Library was founded in 1877:—

Year	Attendance.	Note.
1878	27,452	The first complete year of the Library.
1889	51,325	The latest year of lodgment in Leinster House.
1893	113,888	The first reliable record after the transfer, in 1890, to the present building.
1894	119,500	
1895	125,500	
1896	136,365	
1897	137,832	
1898	142,218	
1899	154,878	
1900	148,405	

The volumes catalogued and made accessible during the year 1900 may be grouped as follows:—

Bibliography, Library Economy, Book Rarities, and Cyclopædic works,	100
Newspapers,	261
Philosophy,	47
Religion, Theology, Ecclesiastical History,	136
Sociology, Statistics, Political Science,	50
Political Economy,	32
Law,	57
Patent Office Publications,	150
Parliamentary Papers,	169
Administration,	90
Associations,	5
Education,	57
Commerce,	19
Amusements, Customs, and Manners,	37
Philology,	56
General Science,	50
Mathematics,	19
Astronomy,	24
Physics, Light, Heat, Electricity,	34
Chemistry,	70
Geology,	95
Palæontology,	10
Biology, Anthropology, &c.,	28
Botany,	40
Zoology,	134
Useful Arts in General,	14
Medicine,	47
Engineering,	66
Agriculture,	61
Domestic Economy,	28
Communication, Commerce, Railway Guides, &c.,	42
Chemical Arts, Manufactures and Trades,	8
Fine Arts in General,	28
Landscape Gardening,	9
Architecture,	41
Sculpture,	26
Drawing and Design,	49

Painting,	47
Engraving,	7
Photography,	3
Music,	8
Archæology,	141
General Literature,	8
English Literature (Essays, Poetry, Periodicals, &c.),	204
German,	49
French,	41
Italian,	26
Latin,	7
Greek,	7
Other Literatures,	48
General History,	14
Geography and Travel,	75
Biography, Genealogy, Heraldry, &c.,	103
Ancient History,	16
History of Europe,	160
,, ,, Asia,	4
,, ,, Africa,	7
,, ,, America,	21
	3,185

Subjoined is the return as to Binding done for the Library during 1900:—

In the binder's hands, Dec. 31st, 1899,	486 vols.
Sent to the binder during 1900,	3,600 ,,
	4,086 ,,
Returned by the binder during 1900,	3,636 ,,
In the binder's hands, Dec. 31st, 1900,	450 ,,

Subjoined is the return as to Binding done for the Library during the quarter January–March, 1901:—

In the binder's hands, Dec. 31st, 1900,	450 vols.
Sent to the binder during the quarter,	900 ,,
	1,350 ,,
Returned by the binder during the quarter,	875 ,,
In the binder's hands, March 31st, 1901,	475 ,,

Subjoined is the account of books borrowed from the Library by members of the Royal Dublin Society, and by certain officers of the Institutions of Science and Art:—

In borrowers' hands Dec. 31st, 1899,	181
Lent during 1900 to members of the Royal Dublin Society,	1,704
Lent to officers of the Institutions of Science and Art,	304
	2,189
Returned during 1900,	1,996
In borrowers' hands Dec. 31, 1900,	193
With members of the Royal Dublin Society,	129
With officers of the Institutions of Science and Art,	64
	193

Subjoined is the account of books borrowed from the Library by members of the Royal Dublin Society, and by certain officers of the Institutions of Science and Art, during the quarter January 1, 1901, to March 31, 1901:—

In borrowers' hands Dec. 31, 1900, ...	193
Lent, Jan. 1 to March 31, 1901, to members of the Royal Dublin Society, ...	479
Lent, Jan. 1 to March 31, 1901, to officers of the Institutions of Science and Art, ...	81
	753
Returned, Jan. 1 to March 31, 1901, ...	583
In borrowers' hands, March 31, 1901, ...	170
With members of the Royal Dublin Society, ...	115
With officers of the Institutions of Science and Art,	55
	170

The number of Members of the Royal Dublin Society entitled to borrow, according to the last official list published by the Society, is 345.

Gifts have been received during 1900 from the following private donors:—

Barrett, W. F.
Bloch, Mons. Jean de, of Warsaw.
Casey, M. A., Editor, *Drogheda Independent.*
College Historical Society, Trinity College, Dublin.
Cousins, James H., Madely, Sandymount.
Davies, A. M., 25, Mortimer-street, London, W.
Dawbarn and Ward, Limited.
Dix, E. R. M'Clintock.
Dowling, E. J. Hughes.
Duffin, Adam, Belfast.
Durning-Lawrence, Sir Edwin.
Ferguson, Mrs., Dalkey, Co. Dublin.
Foy, George, F.R.C.S.
Gray, Wellington, late of Druid Lodge, Killiney, now of Athlone.
Greene, Thomas, M.A., 49, St. Stephen's-green.
Gunnis, J. W., C.E., County Surveyor, Longford.
Hagerup, H., Copenhagen.
Harvey, Thomas W.
Haslam, Mrs., Rathmines.
Hogg, Jonathan, D.L.
Hutton, Henry Dix, LL.D.
Irvine, Mrs. Mary Catherine.
James, George, 37, Tenby-street, Birmingham.
Little, Miss L. M., 6, Lower Fitzwilliam-street.
Lloyd, Henry Demarest, Illinois, U.S.A.
Magee, Miss, 26, Eglantine-avenue, Belfast.
Magee, Rev. Hamilton, D.D.
Magennis, B., 22, Geraldine-street.
Mathews, Norris, Librarian, Bristol Public Libraries.
O'Donnavan, Dr. W. J., Rathgar.
O'Reilly, Professor J. H.
O'Shaughnessy, Richard, Wilton-place, Dublin.
Pearsall, W. Booth, M.D.
Polk, William, M.D.
Reade, T. Mellard, F.G.S.
Roche, Dr. Antony.
Rolleston, Thomas William.

Sadler, R., Surrey.
Scharff, Robert Francis, PH.D.
Smith, General John Corson.
Thompson, Miss S. M., Macedon, Belfast.
Thompson, the late William, J.P., Macedon, Belfast.
Urwick, Rev. William, M.A., Hampstead.
Webb, Alfred, Rathgar.
Westropp, Thomas Johnson.

Gifts have been received from the following private donors during the quarter January to March, 1901:—

Choate, His Excellency Joseph H., Ambassador of the U.S.A.
Cole, Professor Grenville A. J.
Coleman, Rev. Ambrose, O.P.
Crooke, Major J. J., Rathgar.
Dutton, Mrs., Dartmouth-square, Dublin.
Fitzpatrick, S. A. O.
Green, James, of the Massachusetts Bar.
Gunnis, J. W., County Surveyor, Longford.
Hemphill, Rev. Samuel, D.D.
Lundstedt, Dr. Bernhard, Stockholm.
Marble, Manton.
Mathews, Norris, Librarian, Bristol Public Libraries.
Mayor, Rev. Professor John E. B.
Meredith, Miss Gertrude Euphemia.
Monahan, Rev. John.
Smith, General John Corson, Chicago.
White, Rev. G. P., Cashel Diocesan Library.

Gifts have been received during 1900 from the following Public Departments, Public Bodies, or Institutions:—

Municipal Council of the City of Dublin.
Her Majesty's Stationery Office.
The Education Department.
Patent Office.
Office of the Registrar-General of Scotland.
British Museum.
Ordnance Survey of England and Wales.
,, ,, ,, Scotland.
,, ,, ,, Ireland.
Geological Survey of Great Britain.
,, ,, ,, Ireland.
,, ,, ,, Canada.
,, ,, ,, India.
,, ,, ,, United States of America.
India Office.
Office of the Agent-General for Queensland.
Department of the Interior, U.S.A.
Department of Agriculture, U.S.A.
Labour Department, U.S.A.
Bureau of Statistics, Treasury Department, U.S.A.
Smithsonian Institution.
London County Council.
London School Board.
Royal Dublin Society.
Society for the Preservation of the Irish Language.
Cambridge University Syndicate, for Higher Local Examinations.
Board of Trinity College, Dublin.
College of Science, University of Tokyo, Japan.
New South Wales Board of International Exchanges.
Aspatria Agricultural College.

Association for Promoting Christian Knowledge.
Australasian Association for the Advancement of Science.
California University, International Competition for the Phœbe Hearst Agricultural Prize.
Cirencester Royal Agricultural College.
Department of Agriculture and Technical Instruction for Ireland—the Fisheries Branch.
Dublin Sanitary Association.
Foreign Office.
Highland and Agricultural Society of Scotland.
Indian National Congress.
Irish Land Commission, Merrion-street, Dublin.
John Rylands Library Governors.
Library of Congress, U.S.A.
London—the Corporation of London.
Royal Irish Academy.
Salford Museum and Library Committee.
Scottish National Gallery Governors, viz., the Board of Manufacturers, Royal Institution, Edinburgh.
Trinity College, Dublin, the Provost and Senior Fellows.
Woman's Suffrage Association of Dublin.

The following Societies present publications annually :—

The Royal Society: *Proceedings.*
The Royal Dublin Society: *Proceedings,* and *Scientific Proceedings and Transactions.*
The Royal Irish Academy: *Proceedings and Transactions.*
Royal Society of Antiquaries, Ireland: *Journal.*
The County Kildare Archæological Society: *Journal.*
Waterford Archæological Society: *Journal.*
Belfast Naturalists' Field Club: *Report and Proceedings.*
Cremation Society: *Journal.*
Royal Institute of British Architects: *Journal, Calendar, and Transactions.*
Society of Chemical Industry: *Journal.*
Sanitary Institute: *Journal.*
Society for the Preservation of the Irish Language: *Report.*
Royal Academy of Medicine in Ireland: *Transactions.*

The following periodical publications have been presented to the National Library of Ireland, either by the publishers, or by private donors, or by public bodies :—

Alliance News.
Board of Trade Journal.
Board of Agriculture Journal.
British Medical Journal.
Bulletin, Department of Labour, U.S.A.
Child's Guardian.
Commerce.
Cyclists' Touring Club Gazette.
Drapers' Record.
Free Russia.
Gentlewoman.
Invention.
International Theosophist (formerly *The Irish Theosophist*).
Irish Military Guide.
Kew Bulletin.
Land and Water.
Library Association Record.
New Philosophy.

New Church Magazine.
Propriété Industrielle.
T.C.D.
Travel.
Visitor.

The following Irish newspapers have been presented for some years free of charge, and are filed for reference as bound volumes:—

Athlone Times.
Belfast News-Letter.
Cork Constitution.
Cork Daily Herald.
Cork Examiner.
Clare Journal (Ennis).
Drogheda Independent.
Dungannon News.
Evening Herald (Dublin).
Evening Telegraph (Dublin).
Irish Cyclist.
Irish Field.
Irish Figaro.
Irish News (Belfast).
Irish Weekly (Belfast).
Irish Wheelman.
Kildare Observer (Naas).
Leinster Express (Maryborough).
Leinster Leader (Naas).
Limerick Chronicle.
Mid-Ulster Mail (Cookstown).
Northern Whig (Belfast).
Portadown News.
Rathmines News.
Skibbereen Eagle.
Saturday Record (Ennis).
Sligo Independent.
Tuam Herald.
Tyrone Constitution (Omagh).
Waterford News.
Western Star (Ballinasloe).

Further extension of this list has taken place during 1900, the *Wexford People* for 1900, the *Wexford Independent* for 1899–1900, the *Athlone News* for 1900, the *Athlone Times* for 1900, the *United Irishman* for 1900, the *Londonderry Standard* for 1900, having been presented by their proprietors.

The *Hibernian Journal* for 1792 was acquired by purchase. This was the only addition to the files of Irish eighteenth-century Newspapers in the Library.

The *Clonmel Chronicle* will in future be presented by the proprietor. The numbers for 1901 have been already forwarded.

APPENDIX II.

REPORT OF THE LIBRARIAN

NATIONAL LIBRARY OF IRELAND
April 25, 1901

To the Council of Trustees of the National Library of Ireland

GENTLEMEN

During 1900, the subject-references as far as the end of "C," from Mr. Archer's catalogues, 1874–1893, were inserted in alphabetical order in two large folios, which now stand in the Public Reading Room. Duplicates and triplicates of many of the entries were inserted under various headings, in order that those who might think of looking for them there should not be disappointed. With the new year were acquired typewriters, and a small Card-catalogue outfit, and an effort to type on cards copies of the subject-references of the most recent years was begun. This has temporarily compelled the cessation of the insertion in folios of the letters "D" to "Z" from Mr. Archer's catalogues; but the latter task will be resumed.

As in 1899, many volumes in the Joly Collection have been bound, and it is incidental to this that they have received the Library stamp, like all other books sent to the binder.

Great numbers of the newspapers presented by the Royal Dublin Society have been made into volumes during the year; many volumes of Parliamentary Papers perfected and bound.

Very important has been the careful examination, collation, and binding of a number of the MSS. of the Library, including the Harris *Collectanea*. This work was done in the large basement of the Library.

Last year some account was given of the said Manuscript *Collectanea de rebus Hibernicis*, the compilation of the Irish historian, Walter Harris. Without attempting to completely treat the subject of the MSS. in the Library, the following list of some of the others which it contains may be useful:—

1. Keating's "History of Ireland" in Celtic; the transcript made in the summer of 1722 by Eugene O'Rahilly.
   This volume is described by Father Dinneen in his edition of the Poems of Eugene O'Rahilly, lately published by the Irish Texts Society.
   It is a small folio of 151 pages. *One volume.*
2. Down Survey of Tipperary, a small quarto of about 400 pages, of the seventeenth century. *One volume.*
3. Materials for the Statistical Survey of Tipperary, date about 1833; a small octavo, with newspaper cuttings inserted in several places. 293 pages. (The volume "Tipperary" in the R.D.S. Statistical Survey was never printed.) *One volume.*
4. Phillips, Sir Thomas: Book of the Derry Plantation, made in 1609. There is a characterization of this manuscript in Hill's "Plantation of Ulster," page 444. Consult also Harris's *Hibernica*, 1747. It is a small folio, and is incomplete. 160 pages. *One volume.*
5. Records of the French Consulate in Alexandria: a fragment containing the years 1687 to 1694, inclusive. There are gaps in the fragment. This manuscript was found in Alexandria when the British captured the city in 1807. *Two thick volumes.*
6. Robertson, William: A journal of William Robertson, Architect, born in Kilkenny 1770, died at Rosehill, near Kilkenny, May, 1856. The journal is chiefly of architectural interest, and occupies 165 pages. *One volume, folio.*

   Plans and Elevations for five classes of Farm Houses and Cottages, with the necessary Farm Offices and Gardens. 1835. Large quarto, thin. *One volume.*
8. Harris, Walter: "Life of Sir Richard Cox." A thin folio, 148 pages. *One volume.*

9. Larminie, William: Translation into English of the *De Divisione Naturæ* of Joannes Scotus Erigena.

There is, I believe, no other translation into English of this work. Mr. Larminie, a writer of distinction both in prose and verse, died in 1900, and his brother presented the manuscript to the Library. *Two volumes, quarto.*

10. The manuscript, in five bound, and one unbound, volumes, of the "Natural History of Ireland" of William Thompson, presented to the Library in 1900 at the desire expressed by the author's brother, the late James Thompson, J.P., Macedon, Belfast.

The concluding volume has not been prepared for binding, and to do so would be a task needing considerable time, care, and knowledge of the subject.

Five volumes bound, one unbound; quarto.

11. The manuscript of the Report of the Commission on the Bogs of Ireland, and also of the Reports of the several surveyors employed by the Royal Dublin Society in making the celebrated survey of the Bogs. This manuscript includes maps and sections on a very large scale, some of which have never been printed.

The manuscript as preserved in the Library is bound in twelve volumes, the volume containing the unpublished plans and sections being a very large one. The names of the surveyors are: Richard Lovell Edgeworth, David Aher, Alexander Nimmo, Richard Brassington, William Bald, Thomas Townshend, J. Alexander Jones, Thomas Colbourne, John Longfield, and Richard Griffith.

12. The manuscript of the translations from Buchoz's: *Dictionnaire Vetérinaire* made by Rev. Dr. Lanigan, or under his supervision, by the direction of the Committee of the Royal Dublin Society. *One thick folio volume.*

13. "Instructions for Shepherds": a translation made in 1800–1801 by Rev. Dr. Lanigan, or under his supervision.

One folio volume.

14. Turkish manuscript: "Zinat-al-Tawarikh."

One thin volume, average quarto format.

15. Persian manuscript—"Nizami: The Sekander-Nameh; or the History of Alexander the Great."

One volume, average octavo format.

16. Diary of a Tour in Europe, 1788–90.

One small quarto volume, unpaged.

17. Scharff, Robert Francis: "History of European Fauna." 190 pages. *One folio volume.*

18. Giesecke, Karl Ludwig: *Verzeichniss einer geographischen Sammlung Grönlandischer Mineralien*, 1806–1813. 406 pages.

One small quarto volume.

19. Giesecke, Karl Ludwig: *Mineralogisches Reisejournal uber Grönland*, 1806–13. 646 pages. *One small quarto volume.*

20. Giesecke, Karl Ludwig: *Bericht einer Mineralogischen Reise auf Grönland im Form eines Tagebuchs.* 1,466 pages.

Two small quarto volumes.

This is a copy with verbal variations of the immediately preceding manuscript.

21. Giesecke, Karl Ludwig: *Katalog einer vollständigen systematischen Mineralien-Sammlung nach Karstens Grundsätzen geordnet und beschrieben*, 1801; about 530 pages.

One folio volume.

22. *Hiberniæ Antiquæ et Novæ Nomenclatura.*

"Com. 12 April, 1832. J.C."

(At the end of the alphabetically arranged names of Irish places is the following:—"Finis Jany. 12, 1771. May 12, 1832.")

23. Salis, Jerome Count de: Memoir addressed to the Right Honourable the Dublin Society for the encouragement of Arts and Manufactures, and the Right Honourable the Farming Society of Ireland, about the most efficient means of bettering the situation of the poorer classes in Ireland, and improving that part of the United Kingdom. By Jerome Count de Salis of the Holy Roman Empire, Fellow of the Royal Society of London, Member of the Dublin Society, and a Proprietor of Land in Ireland, and a Corresponding Member of the Agricultural Society of Florence in Italy. 161 pages. *One folio volume.*

During the fifteen months to which this Report relates the Trustees have added two noteworthy MSS. to the Library. One of these is Fee-Book No. 1, of Daniel O'Connell, a quarto note-book of 172 pages, which records O'Connell's fees from the first received on May 24, 1798, up to those received in May, 1805. It is of much biographical interest. An article on this MS. has been published in the *New Irish Jurist* for Dec. 13, 1900. The other MS., a small folio of 154 pages, bound in vellum, with the book-plate of Lord Branden, contains "An Abstract of Receipts and Payments in the Treasury Office, Dublin," from July 27, 1696, to January 11, 1697.

The above memoranda do not quite complete the account of the manuscripts of the Library. And there are, besides, about twenty volumes of manuscripts in the Joly Collection, some in Celtic, and nearly all relating to Irish affairs.

The two special cataloguers employed in the revision of the old catalogue have been chiefly engaged on two important sections—(1) Biography, (2) Description and Travel. They have, in addition, catalogued several sets of volumes in the historical section, which time did not permit them to deal with in their proper place. These were the *Recueil des Historiens des Croisades*, the *Harleian Miscellany*, and the *Recueil des Historiens des Gaules et de la France*. The cataloguing of the last-mentioned series, of first-rate importance to the student of the sources of French History, proved one of the most difficult tasks yet undertaken, owing to the piecemeal manner in which the writings of the various authors were issued. The publications of the *Goethe Gesellschaft* were also included in the year's work.

At this moment, when the first Annual Report to a new Irish Department is being presented, the following notes on the early history of the Royal Dublin Society's Library are submitted. It is hoped to add more in subsequent reports.

The Dublin Society, as is well known, was founded in 1731, incorporated by Royal Charter in 1749. The first rules of the Society, made in December, 1731, provided for the foundation of a Library. Transactions of other societies and all useful works were to be purchased.

Part of the subsidy for public service granted by the State was devoted to the purchase of books which related to the purposes of the Society, the fostering of Science and the Arts. Later, when the Society appointed lecturers, the purchase of books was largely determined by the needs of these lecturers. The borrowing by the general body of the members was at first a subordinate motive. In the beginning of the nineteenth century, the introduction of persons not members of the Society into the Reading Rooms of the Society was considered a grievance, and the minutes record frequent objections to this. It is interesting to notice, however, that no efforts at artificial limitation could prevent the members from introducing readers. Stewart's *Dublin Almanack*, 1820, page 181, under "Dublin Society," has the following entry:—"Departments open to the Public. . . The Library, on introduction to the Librarian." Nor was it possible to limit the purchase of books to what are called "solid, useful works"—the catholicity of a public library asserted itself. This is brought out in the evidence taken in 1836 before the Royal Commission on the Society.

It was this Royal Commission of 1836 which first laid down definitely the principle that, as the Library was maintained out of funds supplied by the State, it should, like the British Museum Library, be open *as of right* to persons properly introduced. The words of the Report are: "The Library of the Royal Dublin Society ought to be considered as intended not solely for the advantage of the comparatively few individuals who belong to the Society, but as a *National Library*, accessible under proper regulations to respectable persons of all classes . . ." The evidence taken before the Select Committee on Public Libraries in 1849, showed that from 11 a.m. to 5 p.m., on 300 days in the year, the Library was freely open as of right to persons introduced by members, that the number of attendances in one year had been known to exceed 8,000; that the sum allotted for the purchase of printed books from 1816 to 1849 was £500 per annum. The number of volumes in the Library had been estimated as 11,000 in 1839, and was about 19,000 in 1849.

The Committee which took evidence on the Royal Dublin Society in 1862 learned that "the allocation for the purchase of books, binding and contingencies, is £550 a year; the whole expense of this Department [the Library] is about £930"; further, that "the experiment of opening the Library in the evening three times a week, has been very successful." "The funds will not allow the opening of it every night. . . . The average attendance of readers, exclusive of members, is stated in the last Report to be forty-nine in the day and nine in the evening; but at present [in 1862] double the number attend in the evening." "The forms [of introduction used by the members] only amount to a guarantee of respectability."

The newspapers of the National Library are at present regarded as an important part of its contents. The Commission of 1836 reported itself adverse to the expenditure of public money on newspapers. The following points in the evidence on this subject are quoted verbatim:—"The practice of taking in newspapers as sources of information has existed in the Society for upwards of a hundred years." "Whatever sum is appropriated to the Library, it is out of that the newspapers have been paid for, with the exception of one short interval." "From £70 to £75 [was spent on newspapers annually]."

I have the honour to be,

Your obedient Servant,

THOMAS W. LYSTER,

Librarian.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

ROYAL COLLEGE OF SCIENCE FOR IRELAND.

REPORT OF THE DEAN AND COUNCIL FOR 1900.

To the Secretary of the Department of Agriculture and Technical Instruction for Ireland.

Sir,

I have the honour to submit the Report of the Dean and Council of the Royal College of Science for Ireland for the year 1900, together with copies of the examination papers for the Session 1899--1900, and the Directory for the current Session.

The courses of instruction have been carried out in accordance with the programme sanctioned by the Department of Science and Art and the Department of Agriculture and Technical Instruction, although difficulties have arisen owing to the lack of accommodation in some of the laboratories, and the comparatively small sum available for the purchase of apparatus and materials for practical work.

The usual sessional examinations were held in all the subjects of instruction.

Courses of instruction for teachers, including lectures and laboratory practice in each case, were also given voluntarily during the vacation, as follows :---

Physics (Electricity and Magnetism), by Professor Barrett.

Chemistry (Chemical manipulation), by Mr. J. Holms Pollok.

Botany, by Dr. G. H. Pethybridge.

In October, 1900, the Department of Agriculture and Technical Instruction appointed a number of students to enter on courses of one or three years in the College, with a view to their becoming qualified as teachers of Science. The ordinary entrance examination in Elementary Mathematics was held in the case of all these students, except where proof of previous qualification could be produced. It is a matter of satisfaction to the Council that the training of teachers—one of the objects for which the College was founded—has thus received recognition.

In the same month, it was arranged that the students of the Royal Veterinary College for Ireland should receive instruction in Chemistry, Zoology, and Botany, in the Royal College of Science.

The introduction of these new classes of students has further emphasized the inadequacy of the accommodation in the present building. Attention has again and again been called to this matter, a concise statement, for example, appearing in the Report of the Dean and Council for 1898. It will be impossible to adequately carry on the instruction of the teachers in training in their second and third years under the present arrangements as to the staff of assistants in the College, three of whom are employed for one term only of each Session, two of these being, moreover, temporary assistants.

In response to a communication from the War Office, the Council submitted the names of certain students for nomination to commissions in Her Majesty's forces. Of these, Mr. R. M. Gage received a commission in the Artillery, Mr. A. H. Blackwood Hamilton, Mr. E. L. Manders and Mr. R. J. Stoker received Infantry commissions.

The inadequate accommodation in the Physical Department has been repeatedly pointed out, and only a slight relief has been afforded by the small addition of a part of the South Gallery, at the expense of the Department of Mineralogy. A large part of the space in the present physical laboratory needed for students is occupied by cases for apparatus. Much of this apparatus has to be stowed away in order to give room, and has to be set up and readjusted for use when required, and again taken down, to its manifest injury.

The Professor of Physics reports that during the year the collection of Physical apparatus has been enlarged by the addition of Professor Ewing's Magnetic Permeability Bridge and Yoke, Lord Kelvin's Electrostatic Voltmeter, a model current Transformer specially designed for class instruction, and one or two other smaller pieces of Electro-technical apparatus. The recent employment of a skilled mechanic for repairs of physical apparatus, &c., is most satisfactory, and has resulted in a distinct saving of expense.

The Professor of Chemistry reports that during the past year the effect of overcrowding in the lecture room and chemical laboratory has been seriously felt to be not only a hindrance to the students and an obstacle in the way of their practical studies, but also detrimental to their health, and that of the teaching staff more particularly. In consequence of the absence of any proper means of supplying fresh air to the chemical laboratory, all those who are engaged therein have to submit to conditions which cause them to be slowly poisoned or alternatively exposed to violent draughts of cold air from open windows. It frequently occurs that it is impossible to work in the laboratory if the windows are opened, because of the risks of accidents from the breakage of vessels containing corrosive acids or inflammable liquids, and of gas flames being blown into the faces of the students.

From 1890 onwards, reports and representations, often of a detailed character, have been made respecting the difficulty of conducting work under the insanitary conditions that still prevail. The remarks in the report of the Dean and Council for 1895 may be cited as an example. A complete scheme of ventilation, for which plans were prepared some years ago, none the less remains to be undertaken. The so-called Tobin's tubes that have been inserted were pronounced unsuitable by the Professor of Chemistry prior to their erection, and have proved not only ineffective, but also, as a general rule, inoperative. The condition of the laboratory has been the cause of the resignation of one of the demonstrators, and of serious protest from all.

The Professor of Zoology reports that the resources of his laboratory have been strained, owing to the large number of students in the first year, and also to a large class of veterinary students. A case of specimens had to be removed, in order to provide seats for these students. If these classes continue to be as largely attended, it will be necessary to increase the teaching staff, and more accommodation and appliances will be required.

The Professor of Botany reports that, as a temporary arrangement, a part-time assistant was available in the second term of the Session. The post was taken by Mr. G. H. Pethybridge, PH.D., B.SC., whose services were continued during July for the voluntary summer course for teachers, as well as for the large class of Veterinary students during the first term of the present Session, 1900--01. The Professor of Botany hopes that Dr. Pethybridge's services may be permanently available for the botanical teaching in the College. Owing to the fact that only one laboratory is available in the College for both Botany and Zoology, the Veterinary students worked in the laboratory at the Royal Botanic Gardens, Glasnevin, where every facility was given them.

The Professor of Geology and Mineralogy gave the course of demonstrations in Palæontology in the second term of last Session, a course usually undertaken by the demonstrator. This is necessitated by the present arrangement as to assistants, which is the best that can be made under the circumstances, but which cripples the work of the Department of Botany in one term and of the Department of Geology in the other. Mr. H. N. Woodward, B.A., of Downing College, Cambridge, was appointed temporary demonstrator for the first term of the Session 1900--01. Under his care progress has been made with the arrangement of the teaching collections. Gifts of fossils, rocks, and minerals, have been received from Miss Going (from the collection of the late Mr. E. Mayne), Madame Christen, and Mr. A. Harker, M.A.; Mr. E. St. J. Lyburn, A.R.C.SC.I., has presented a complete series of samples of the rocks assayed by him during his investigation as to the occurrence of gold in Ireland. A number of useful specimens were bought from the collection of the late Dr. Frazer, of Dublin.

As in previous years, the practical work on geological maps had to be done in the lecture room, owing to the small accommodation for students in the laboratory. The few additional places secured by extending the laboratory bench receive no daylight, and all work has to be done at them by the aid of gas-lamps.

In the Engineering Department a large double-geared drilling machine and a 2-h.p. oil engine have been added to apparatus in the past Session, while the testing-machine has been improved by several additions.

In consequence of the large increase in the number of students in the Engineering Schools, which was due to teachers in training and also occasional students, it became necessary to appoint a temporary assistant. This was sanctioned by the Department of Agriculture and Technical Instruction. The demonstrations by the Professor in workshop practice and testing materials have been considerably enlarged in their scope.

The Professor of Engineering undertook, at the request of the Department, to deliver lectures in different parts of Ireland on the advantages of technical education, one course being addressed to the machine-trades and the other to artisans generally

The following scientific papers have appeared during the past year:---

Professor W. F. BARRETT, F.R.S., M.I.E.E.:

Book 2 of an investigation of the claims of the so-called Dowser, a psycho-physical research. On some novel Thermo-Electric Phenomena.---Trans. Royal Dublin Society, Jan. 1900, and *Philosophical Magazine*, March, 1900.

Professor BARRETT, Mr. W. BROWN, B.SC., and Mr. R. A. HADFIELD, M.INST.C.E., Master Cutler of Sheffield:

On the Electrical Conductivity and Magnetic Permeability of various alloys of iron.---Parts I. and II., Sci. Trans. Royal Dublin Society, January, 1900.

Professor W. N. HARTLEY, F.R.S.:

The Action of Heat on the Absorption Spectra and Chemical Constitution of Saline Solutions.---Scientific Transactions of the Royal Dublin Society. Vol. VII. (Series II.), pp. 253--312.

On the probable origin of some of the lines observed in the Spectra of Stars and of the Chronosphere.---*Astrophysical Journal*. Vol. XI.

Professor W. N. HARTLEY, F.R.S., and Professor JAMES J. DOBBIE, D.SC., M.A.:

(1.) The absorption Spectra of Ammonia Methylamine, Hydroxylamine, Aldoxime, and Acetoxime.--- Trans. Chem. Soc., Vol. 77, p. 318.

(2.) The Ultra-Violet Absorption Spectra of some closed Chain Carbon Compounds, Part II., Dimethylpyrazine, Hexamethylene, and Tetrahydrobenzene.---Trans. Chem. Soc., Vol. 77, p. 846.

(3.) The Curves of the Molecular Vibrations of Benzantialdoxime and Benzsynaldoxime.---Trans. Chem. Soc., Vol. 77, p. 509.

(4.) Spectrographic studies in Tautomerism.
The Absorption Curves of the Ethyl Esters of Dibenzoyl succinic Acid.---Trans. Chem. Soc., Vol. 77, p. 498.

Professor W. N. HARTLEY, Professor JAMES J. DOBBIE, and Mr. PHOTIOS G. PALIATSEAS :

A study of the Absorption Spectra of o-Oxy Carbonil and its Alkyl Derivatives in relation to Tautomerism.---Trans. Chem. Soc., Vol. 77, p. 839.

In his capacity as Chairman of a Committee of the British Association appointed to investigate the relationship between the Absorption Spectra and the Chemical Constitution of Organic Substances, Professor Hartley presented a Report for the year 1900 embodying the foregoing publications.

Professor A. C. HADDON, F.R.S., has been engaged in working out the results of his recent expedition to British New Guinea and Sarawak, and has published a paper on the Anthropogeography of British New Guinea.--Journal Royal Geographical Society, 1900.

Professor T. JOHNSON, D.SC. :

"The Flax Crop and Flax Retting."---*Journal* of the Department of Agriculture and Technical Instruction for Ireland, I., 1900.

Professor G. A. J. COLE, and Mr. J. A. CUNNINGHAM, A.R.SC.I., B.A. :

"On certain Rocks styled 'Felstones' in the County of Donegal."---Proc. Royal Dublin Society, 1900.

Professor G. A. J. COLE :

"On Metamorphic Rocks in Eastern Tyrone and Southern Donegal."---Trans. Royal Irish Academy, 1900

GRENVILLE A. J. COLE,
Dean of Faculty,
1900--1901.

SECRETARIAL REPORT OF THE ROYAL COLLEGE OF SCIENCE FOR IRELAND FOR THE YEAR 1900 AND THE SESSION 1899–1900.

The number of students who attended the College during the Session which terminated on the 21st of June, 1900, was 98. Of these 70 were Non-Associates and 28 Associate Students taking the three years' course.

The entries for the last two Sessions were as follows:—

1897–98,	... 35 Associates,	... 71 Non-Associates.
1898–99,	... 22 Associates,	... 75 Non-Associates.

The Associate Students were divided as follows:—

First Year, ...	... 14
Second Year, ...	... 7
Third Year, ...	... 7

The seven third-year Associate Students passed their Final Examinations, and were awarded Diplomas as follows:—

Mr. William M. Cross,	Diploma in Engineering.
Mr. James S. Rogers,	" " "
Mr. Cyril A. Harrison,	" " "
Mr. David S. Jardin,	" " Manufactures.
Mr. John A. Cunningham,	" " "
Mr. Robert B. Forster,	" " Applied Physics.
Mr. Alfred L. Oke,	" " Mining.

Mr. Cunningham took out the third year of his National Scholarship, and thus was enabled to work for a second Diploma, he having obtained the Engineering Diploma at the end of last Session.

Only one of the two Royal Scholarships offered each year for competition to the First Year Non-Government Associates was awarded to Mr. Ernest W. Millar, who obtained the highest number of marks at the Sessional Examinations.

The Silver Medal offered for competition to all the First-Year Associates was awarded to Mr. Sydney A. Edmonds, a Royal Exhibitioner.

Mr. Allen, an Associate of the College, was again granted a vacant Royal Exhibition, to enable him to continue his Research work in the Physical Laboratory; but as he was appointed assistant in the Laboratory for the second term he had to resign the Exhibition.

Mr. John A. Cunningham, an Associate of the College, was, on the recommendation of the Council, awarded a Research Scholarship by Her Majesty's 1851 Exhibition Commissioners, which he is taking out at the Cavendish Laboratory, Cambridge. Mr. Wills, also an Associate of the College, has entered on the third year of his 1851 Research Scholarship at the same Laboratory.

Mr. E. J. J. Britton, a Royal Exhibitioner, having obtained a Commission in the Ordnance Department, left the College in November. Messrs. Gage (an Associate of the College), Stoker, Hamilton, and Manders (Students), were, on the recommendation of the Council, given Commissions in the Army.

During the year Mr. Hanna resigned his post of Demonstrator in Botany, Geology, and Palæontology, and Mr. H. N. Woodward was appointed Demonstrator in Geology and Palæontology.

During the year, 427 volumes, including unbound Journals, Transactions, and Reports, were added to the Library, which was visited by 885 readers, over and above the College Staff and and Students.

The advantages afforded to the students by opening the Library for them on two evenings in each week, from 7 to 10, p.m., were duly appreciated, and the attendances on these evenings, between January and the end of the Session, were 292.

The following voluntary evening and afternoon courses were given during the Session: ---

	Number Attending.
10 Lectures on Electric Lighting, &c., by Mr. Brown, ...	47
8 Laboratory Lessons in Electric Lighting, by Mr. Brown, ...	9
11 Lectures on the Physiology of Plants, by Dr. Pethybridge, ...	11

The following summer courses for teachers were held, as in the previous year, in July: ---

	Number Attending
20 Lectures on Physics, by Professor Barrett, and	
20 Lessons in Physics Laboratory work, by Professor Barrett, Mr. Brown, and Mr. Allen, ...	31
20 Lectures on Chemistry, by Mr. Pollok, and	
18 Lessons in Chemical Laboratory work, by Mr. Pollok and Mr. Jardin, ...	28
20 Lectures on Botany, and	
20 Lessons in Botanical Laboratory work, by Dr. Pethybridge, ...	3

At the conclusion of these courses examinations were held, and thirty-seven certificates, entitling the holders to teach under the Board of Education, South Kensington, were issued as follows:—

In Magnetism and Electricity,	... 19
In Chemistry, ...	... 16
In Botany, ...	... 2

The usual Sessional Examinations were held, the results of which were as follows:---

SUBJECTS OF EXAMINATION.	Number of Students in Class.	Number Examined.	Simple Pass.	Pass with Credit.	PRIZE WINNERS.
FIRST YEAR'S CLASSES.					
Pure Mathematics,	22	10	2	2	S. A. Edmonds, 1st Prize. G. H. Delf, 2nd Prize.
Mechanics,	20	10	2	3	G. H. Delf, 1st Prize. S. A. Edmonds, 2nd Prize.
Descriptive Geometry,	21	13	4	2	S. A. Edmonds, 1st Prize.
Physics,	25	17	3	5	G. H. Delf, 1st Prize. S. A. Edmonds, 2nd Prize.
Chemistry,	22	19	5	7	G. H. Delf, 1st Prize. S. A. Edmonds, 2nd Prize.
Zoology,	14	14	7	3	G. H. Delf, 1st Prize. S. A. Edmonds, 2nd Prize.
Botany,	15	9	5	2	S. A. Edmonds, 1st Prize. G. H. Delf, 2nd Prize.
SECOND YEAR'S CLASSES.					
Mathematics,	7	7	4	3	S. A. Main, 1st Prize. J. Davidson, 2nd Prize.
Mechanics,	6	6	2	2	S. A. Main, 1st Prize. J. Davidson, 2nd Prize.
Machine Construction and Drawing.	6	6	1	5	S. A. Main, 1st Prize. A. A. Pollock, 2nd Prize.
Experimental Physics,	5	5	2	3	J. Davidson, 1st Prize. T. Crook, 2nd Prize.
Applied Physics,	2	2	1	1	S. A. Main, 1st Prize.
Advanced Chemistry,	6	1	.	1	T. Crook, 1st Prize.
Practical Chemistry,	1	1	.	1	T. Crook, 1st Prize.
Mineralogy,	8	7	2	5	S. A. Main, 1st Prize. T. Crook, 2nd Prize.
Advanced Zoology,	8	6	.	4	Miss A. Vance, 1st Prize. Miss J. Stevens, 2nd Prize. R. Crook, 2nd Prize.
Advanced Botany,	10	5	2	3	—

SUBJECTS OF EXAMINATION.	Number of Students in Class.	Number Examined.	Simple Pass.	Pass with Credit.	PRIZE WINNERS.
THIRD YEAR'S CLASSES.					
Practical Physics (Engineering Faculty).	3	3	1	2	W. M. Cross, 2nd Prize.
Practical Physics (Applied Physics Faculty).	1	1	.	1	R. B. Forster, 1st Prize.
Practical Chemistry,	1	1	.	1	D. S. Jardin, 1st Prize.
Mathematical Physics,	1	1	.	1	R. B. Forster, 1st Prize.
Applied Mechanics,	3	3	.	3	W. M. Cross, 2nd Prize. C. A. Harrison, 2nd Prize.
Mechanism and Thermodynamics.	7	6	1	5	D. S. Jardin, 2nd Prize.
Engineering.	3	3	.	3	W. M. Cross, 1st Prize.
Surveying,	9	7	3	4	W. M. Cross, 1st Prize. A. L. Oke, 2nd Prize.
Geology and Palæontology.	10	5	3	2	A. L. Oke, 1st Prize.
Mining,	1	1	.	1	A. L. Oke, 1st Prize.
Assaying,	1	1	.	1	A. L. Oke, 1st Prize.
Assaying (Non-Associate Class).	3	2	.	2	A. E. Allen, 1st Prize.

Number of LECTURES delivered by Professors during the Session 1899–1900.

Professor Barrett,	68[*]
Professor Hartley,	82
Professor Haddon,	45
Professor Johnson,	53
Professor Cole,	108
Professor Orr,	92
Professor Lyon,	178[†]

[*] 19 Lectures by Mr. Brown for the Professor when absent.

[†] 10 Lectures by Mr. Taylor for the Professor when absent.

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